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WINTER CAMPING

By WARWICK S. CARPENTER

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WINTER CAMPING

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WINTER CAMPING

BY

WARWICK STEVENS CARPENTER

NEW YORK
THE MACMILLAN COMPANY
1920

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ACKNOWLEDGMENT

Some of the matter in the following pages has appeared from time to time in OUTING. It has been so thoroughly recast and added to, however, that it is practically new material. Chapter XI, on "Wild Life in Winter," was published in nearly its present form in *House and Garden*, for February, 1912, and is here republished by courtesy of that magazine.

W. S. C.

FENCE CORNER,
WOODFORD, VERMONT.
August, 1913.

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THE NEW SPORT

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CHAPTER I

THE NEW SPORT

IF cold were quite the absolute condition which a materialistic thermometer would have us believe, we should hardly camp in winter. As it is, that soulless and deceitful regulator of modern life has all but subordinated our independence and enthusiasm to its despotic rule. We have become as bats, which are said to retire at a certain temperature to their caverns and hollow trees, there to slumber until a rise of mercury brings them forth, willy nilly, or, like the automatons of the barometer, that can stay in through no fair weather and out in no foul.

Contrary to such unimaginative dictates, cold is quite a relative matter, not to any fixed degree as a standard of comparison, but rather, first, to humidity, a fact of common knowledge, and, second, *to whether we are oscillating all day between a super-heated build-*

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ing and out of doors. This second relativity is a chief element in that trans-Stygian conception which holds that as soon as the inhabitants have become inured to extreme heat, the climate forthwith changes to one of extreme cold, and vice versa.

During the last fourteen years I have camped in winter at every available opportunity, in cabins, tents, and lean-tos, and now between black flies, midgets, and all the pests of summer and the problem of warmth in winter, I would quickly choose the latter if I could have but one. Yet companions who were caught out with me on our way to a cabin fourteen years ago expressed gratification at the incident, because, they said, they had learned that it is really possible to stay out all night in the woods in winter without freezing! And we had with us blankets galore, an axe, and plenty of food!

Such ideas regarding the feasibility of camping in the open in winter were far more current ten or fifteen years ago than they are today. Since then winter vacations have become increasingly common and camping in winter no longer excites the wondering comments which our own little expedition into the frozen woods brought forth. In fact, nearly every summer

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vacation resort is now livened from time to time during the winter months by the more fortunate of its summer frequenters, who return for a taste of that appeal which Jack Frost throws over vacation land.

This is true not alone of those sections where camping is the chief method of living, but also of other places where accommodations and board are afforded. Certain hotels in the Adirondacks which formerly closed at the first advent of fall are now kept open all winter for visitors whose sole mission is to enjoy the wonderful glory of those winter hills. Similar conditions prevail in the White Mountains, and at some points organized winter sports are conducted. The proprietors of smaller boarding camps and houses now frequently open up for a week or two in the height of winter to accommodate some party whose first knowledge of the country was gained in the summer, while everywhere private summer camps do duty in what was so recently the closed season. In the deep woods, where no cabins exist, summer campers now pitch their winter shelter.

Three years ago I camped for two weeks in a deserted lumber village in the Green Mountains, the story of which was later published in OUTING. Another camping party was then

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in a cabin but a few miles away, and no winter has gone by since without from one to more parties penetrating to the same mountain retreat. Within a sweep of five miles from my own home in the Green Mountains are upwards of a dozen little cabins, hidden away in the woods, which at intervals all winter long are occupied for a few days or a week or two at a time.

Dartmouth College students have their regular winter outing, when they climb some peak in the White Mountains or the Green Mountains and bivouac for the night. In the West excursions into the snow-bound country are becoming steadily more popular, while Canada each year welcomes more and more enthusiasts across her border for a taste of her unspoiled winter. Everywhere, could we follow each intricate winding and branching of the snow-bound trail, would be found snowshoe tracks, bivouacs, lean-tos, cabins, and snow-drifted tents, and, over them all, the spirit of vacation.

This large army of the summer fraternity who are being initiated into the lodge of winter are not simply the more hardy—foolhardy they were called but a short time since—but rather the ordinary lovers of the woods, whose enthusiasm will not be denied. They

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are learning that comfortable camping in winter, no less than in summer, is dependent upon a few simple fundamentals. The following pages devoted to these fundamentals are written in the hope that they may be useful in this new winter movement.

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PERSONAL OUTFIT

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CHAPTER II

PERSONAL OUTFIT

THE problem of bodily warmth in winter is a problem in insulation. Heat is a form of wave motion. Prevent the dissemination of heat waves and you conserve the heat. One of the oldest and commonest illustrations of this fact is found in the dead-air space which builders put in the outer walls of houses, but the most modern and striking instance is in the glass bottles which will keep liquids hot for twenty-four hours and cold for seventy-two. Instead of the dead-air space they have introduced between the inner and outer walls of the bottle a vacuum, which is a very much poorer conductor of heat than even dead air.

In working out the question of clothing in winter we must rely for our insulation very largely upon dead air, but also upon the quality of the materials selected as non-conductors

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in themselves. The dead-air space may be obtained in two ways, both between successive layers of garments and within the meshes of the fabric itself.

Water is one of the best conductors of heat outside of metals, and accordingly it is important not only that the clothing absorb and hold as little of it as possible in case of accidental wetting, but also that the bodily perspiration be passed onward to the outside air with considerable freedom. Clothing which is air tight, such as rubber, and fabrics which absorb and hold moisture to a large degree, such as cotton, are therefore entirely unsuited for winter wear.

The ideal materials, wool, fur, and feathers, are all of animal origin. Nature has designed them for the specific purposes of retaining warmth in the body, and however far we may look among the vegetables, we find nothing which even remotely approaches them. The feathers of the bird serve two main purposes. They give his body bulk to float in the air without unnecessary weight and they hold quantities of confined air as insulation against the cold. When the thermometer drops down around zero and below, the feathers of all the little winged denizens of the forest are puffed out to half again their normal size. Thus they

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may add insulation at will against the greed of Jack Frost for the heat of their bodies.

Cold does not penetrate, though that figure of speech is appealing. It is heat, the positive, which flows outward, and cold is its negative condition. The fur of animals holds much air and in winter, when the hair is thickest, it is largely the additional air confined within the down, under the long, coarse hairs, which holds in the heat. The hair of some animals, as the deer, is hollow, with confined air inside. Eiderdown is full of air and it is this which gives its warmth to the quilt as well as the non-conductivity of the material itself.

The wool of the sheep is much warmer on the back of the animal than it ever can be in the blankets and fabric. On the sheep it is downy and soft, with a maximum of confined air, and it is filled with natural oil which permits no absorption. The moisture of the body works out through the wool by slow degrees. If it was accumulated and held it would form a layer of water for the passage of heat. In manufacture the wool is cleaned of much of its oil, and is carded and spun and woven until its fibers are matted far more than they ever would be on the sheep. Much of the confined air is thus crowded out. Nevertheless, the best

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grades of woolen cloth are still soft and fluffy and warm. Wear them down until the outside fuzz is gone and you have reduced the weight hardly appreciably, but the warmth is tremendously decreased.

Other animal products work in similar fashion. Camel's hair clothing is delightfully soft and holds quantities of air. Garments made from the wool of the Peruvian llama are among the warmest obtainable.

This, then, is the secret of bodily warmth; select fabrics in which the index of absorption is the lowest—they are always of animal origin—find those whose weave holds the largest amount of confined air, and then increase the insulation by successive layers of rather thin garments with air space between. To this may be added another fundamental principle, which is that of avoiding constriction at any point, either by close fitting garments, tight belts at the middle, or footwear which interferes in the slightest with circulation. Let the production of bodily heat go on uniformly and at its highest efficiency, and then insulate the product.

Two suits of underwear will be ample for most winter weather, though at times three will be necessary, especially if they are of rather light weight. They should be a little larger

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than usual, to prevent the successive layers pressing too tightly and to give more room for air space between. Wear two pairs of socks, the under pair of smooth, light weight woolen and the outer heavier. Over these, if it is extremely cold, another pair can be drawn on, preferably a pair of German socks with a draw string at the top to keep them up. Too many socks of the same size bind down upon the feet and prevent circulation.

The shirt should be of wool or one of the other animal fabrics. The sleeves should be long and the neck large.

There are many excellent cloths for trousers, of which Mackinaw is the standard. It is soft in texture and very strong and durable, and nearly rain proof. Mackinaw comes in many grades, from the cheap and flimsy to firm and fine textured, and the utmost care should be used in its selection. Be sure that it is all wool, with no mixture of cotton. It is the most common garment in use among lumbermen, river drivers, and trappers, and comes in many striking color combinations, though the plain steel gray is best for trousers. Have them long in the legs, rather full in the seat, and large enough around the waist to give plenty of freedom from the clothes underneath.

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Over the outside of the trousers pull the last pair of socks. If German socks are worn, the draw string will then shut out the snow. Otherwise the tops of the socks should be secured by a garter or band of cloth.

Too much attention cannot be given to footwear. You will wear moccasins for snowshoeing, either oil tanned or moose hide, elkskin or buckskin. Except in the very coldest sections, where a thaw seldom occurs, my preference is for the oil tanned, because they do not get wet. In cold, dry snow, however, the moosehide, elkskin, or buckskin are preferable. They are softer and warmer and get a much better grip on the snowshoes. It is advisable to have a rather high anklet of cloth sewed to them, which can be tied with tapes and thus keep out the snow.

I have used ordinary high overshoes with an insole with excellent success. They are dry and warm and the rubber heel makes ordinary walking in snow much easier than with moccasins. The rubber is not hard on the raquettes. Rubber shoes with leather tops and felt boots or leggings are the warmest common footgear to be found. They are widely used by lumbermen and others whose work is in the woods, and will stand the hardest usage. It is better, how-

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ever, to use German socks than felt boots under them, as the boots are heavy and collect too much moisture. Inside moccasins of sheepskin, camel's hair, llama wool or sheep's wool, to be worn over the socks and inside the regular moccasins, can be obtained in stores and add much to foot warmth. Others made of rabbit skin are delightfully soft and comfortable, if you can get them.

Over the shirt you may wear a variety of garments. The sweater is most common. It will be more adaptable to a variety of uses if it has a convertible collar, from V neck to turtle neck. Then there are a multitude of vests, paper vests and vests made of skins of animals, hair llama wool or sheep's wool. They add to the warmth, but I have never used them and think that a much better and easier protection is an additional loose-fitting shirt of Mackinaw or Pontiac. These last are the choice of lumbermen and river drivers. Pontiac is made of heavy, raw wool with a fulled nap. It is rather rough and very warm, and shirts made from it are easy fitting and comfortable. They may be tucked into the trousers or allowed to hang outside like a coat.

Over all wear a coat of Mackinaw or some similar material. There are various imported

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cloths more expensive and good in proportion. There are also many special kinds of clothing made from furs or fabrics, most of which can be obtained in proper style only on the ground and from the natives themselves. These are the best that can be had for the purpose, but it is ordinarily quite impossible for campers to get them. For a full discussion of them see Dillon Wallace's *Packing and Portaging.* Faith, however, may be pinned absolutely on the best quality of Mackinaw for all outside camper's clothing in winter.

The coat should have a full belt so that it can be drawn snugly about the middle. In default of a belt on the coat use a strap or sash. Picturesque as is the *red ceinture* of the voyageur, it has its deeper purpose in closing that chamber of insulation.

There are many other kinds of coats which are very serviceable in winter, among them being those made of leather and lined with sheepskin or flannel. The leather is wind proof and snow will not cling to it to melt when you come in by the fire. Canvas hunting coats are good in this latter respect, and outside canvas trousers or overalls have the same advantage.

Winter clothing for women campers should

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be planned along the same fundamental lines as that for men. The woman who will take this almost literally, and wear heavy woolen bloomers, a divided skirt, or loose fitting trousers, will get the most out of her winter vacation. Even in summer skirts are a nuisance in the woods. In the winter they are worse. They interfere with snowshoeing, and are a severe handicap in deep snow. The more sensible clothing of the modern outdoor women of the woods is the only suitable kind for winter.

Mittens are always warmer than gloves. They have a dead air chamber which is heated by the whole hand, instead of five small ones. For hunting they can be obtained with a trigger finger. Fur is the warmest and woolen or similar material comes next. My own practice is to wear a very loose fitting pair of old kid gloves and over them a pair of mittens or gloves. In extreme cold you will want another pair of mittens. Be sure to have the outer pair, at least, with very long wristlets, which will come up over the sleeves and thus not only keep the snow from drifting in, but carry out that closed air theory.

I believe that sleeping bags are always better than blankets in winter, but whichever you se-

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lect, have a covering of light waterproof silk. The usual canvas covers of sleeping bags are much heavier than necessary for ordinary use. Canvas in the tent is obsolete. Its chief purpose on the sleeping bag is to keep out snow and wet and this can be done as effectively with the light weight tent materials as with heavy canvas. It has a further use in keeping the wind from the blanketing and thus preventing rapid radiation. A sixteen-pound bag, or the same weight of blankets, exclusive of the cover, is enough for cold weather. Such a bag can be wrapped as snugly about one as can blankets. If the old style felt sleeping bag is used it will be necessary to have inside it one or more blankets.

The Indians and trappers of Canada use blankets or sleeping bags made of rabbit skin sewed on a lining of woolen blanketing. It is one of the warmest arrangements which can possibly be devised. Sleeping bags of caribou skin with the hair inside are also excellent. But either of these is practically impossible to obtain unless one can pick them up in the country where they are made and used.

There are several sleeping helmets on the market, which thoroughly protect the head and face, but if one is not taken, a soft cap can

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be worn and the blankets drawn over the head so as to leave the nose free. If one is troubled with cold feet, a small hot water bag will forever banish this uncomfortable tendency. Do not be scornful of such an expedient. But be careful not to have the water too hot, or it may induce chilblains. Even warm water will prove a wonderful equalizer of temperature through the long, cold nights. It is the extremities that get cold the quickest and often chill the rest of the body day and night, so look well to them. You will wear one or more pair of loose fitting socks at night, or may possibly use a pair of special bed socks of camel's hair, llama wool, or other warm material.

The cap should be designed to pull down over the ears and should always have a vizor. One made of muskrat skin and lined with flannel, now to be obtained in practically every well stocked store, is the best that I know. The vizor is particularly important, as it cuts out the glare from the sky. The sleeping helmet can also be worn in the daytime when the weather is cold. It protects the face as well as the ears, and may be drawn in so as to leave only the nose exposed.

Reflected light from the snow will often be uncomfortable even in the woods, and if long

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continued will lead to snow blindness. Accordingly smoked glasses will be needed. Get the rubber automobile goggles, as they shut out side reflections better than spectacles or glasses. Nearly everyone dislikes the way that smoked glasses assimilate every color to their own dusky tinge, and so it is well to know that the automobiles have brought in goggles which can be obtained in different degrees of density, the lightest being almost always enough to kill the glare and hardly change the appearance of objects seen.

Goggles may also be obtained with amber colored glasses, which many prefer. Their rubber mounting is comfortable next the face. No metal should touch the skin at any point, and if ordinary smoked spectacles are used they should have a cork bridge, or the metal part should be wound with woolen yarn. The optician will supply a fine rubber tubing to slip over the bows where they touch the ears, or these also can be wound with yarn.

From some dealers special snow glasses can now be obtained, constructed on the principle of Eskimo snow "glasses." They are really not glasses at all, but metal panes with small slits running across them vertically and horizontally. One can see perfectly through these

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slits, but the rest of the pane being opaque the painful glare of the snow and sun is shut out. The panes are mounted in a leather mask, like goggles. If you cannot find these anywhere, remove the glasses from a pair of rubber goggles and substitute thin pieces of wood, cardboard, or darkened tin in which the slits are cut with a knife. Be sure that the edges are smooth, and then blacken them with a match.

Spectacles are by all means superior to glasses in the woods and especially in winter. Have them protected on the bridge and nose with cork, rubber, or yarn. They can be worn under the goggles.

Other details of the personal outfit are those usually found in summer. They will be a toothbrush, comb, towel, soap, handkerchiefs, pipe and tobacco, with an extra pipe, a jackknife, extra spectacles, etc. If in the deep woods, at all times carry a compass. It should preferably be of the watch case type and a shoestring should be attached to the ring and then to the belt or a loop of the trousers. Getting lost in winter may be a serious matter. One may easily follow the back tracks, but if a sudden blinding snowstorm comes up, obliterating these and blotting out landmarks, the compass will be of the utmost importance. Be sure always

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to have in the pocket a well filled, waterproof match case.

In the duffle bag carry an extra supply of clothes. There should be at least one, and preferably two suits of underwear, two or three pairs of socks, and an extra sweater or loose Mackinaw or Pontiac shirt. It is also well to have one or two extra pairs of buckskin, elkskin, or moosehide moccasins. One pair of oil tanned ones is sufficient. In case of a wetting from breaking through the ice, or from rain or thawing snow, there will be dry clothes to be immediately put on.

Carry the extra clothing, toilet articles, and other personal outfit in a waterproof duffle bag with a draw string at the top. Any other receptacle, such as a pack sack without a draw string, is unsatisfactory in winter, because it will not keep out fine sifting snow. The personal duffle bag may be large enough to include also the blankets or sleeping bag, but it will be found more convenient to have the duffle bag as small as possible and of very light weight material, so that the personal kit may be easily reached without first taking out a lot of other stuff. The duffle bag at night makes a very satisfactory pillow.

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PARTY OUTFIT

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CHAPTER III

PARTY OUTFIT

THE cooking outfit will consist of kettles, mixing pans, frying pan, pancake turner, teapot, cups, plates, knives, forks, and spoons, cooking spoons, cooking knife, and a dumpling pan.

It is now entirely out of date and unnecessary to take kettles which do not nest. Complete outfits can be obtained from all sporting goods dealers and of many department stores, in which the kettles will all nest inside the largest kettle without any lost space between and leave additional room in the smaller kettle to hold a teapot and some of the smaller utensils. Inside the teapot the cups will all fit snugly, with room besides for still other smaller articles.

The materials of which these outfits are made are tin, or steel that has been tinned and

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retinned, and aluminum. The aluminum is the best and most expensive and it is nearly indestructible. In weight it is appreciably lighter. Outfits made of steel and retinned are, however, practically as good, and the small additional weight is not of much moment. In both of these outfits the kettles, teapot, and cups are all stamped from one piece, without seams to leak in the heat of the fire or keep springing apart. Some of the tin outfits, however, have seams that are turned and soldered and their period of usefulness is correspondingly short.

Twelve years ago I bought one of the steel outfits for about six dollars, with the idea of trying it out and then buying a similar outfit in aluminum for about twenty dollars. The same steel outfit is still doing service. The kettles are blackened and battered and misshapen. Some of their rims have cracked from bending and most of the bale handles have been lost and others, made from hay wire, substituted. For all practical purposes, however, this outfit is as good as new and I am still looking forward to the day when it will outlive its usefulness and permit me to use all aluminum. It has proved conclusively that well made steel outfits stamped from one piece of metal are as near indestructible as one could wish. Accord-

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ingly there is more argument in weight and price than in strength.

There is more real choice, however, in the matter of cups. Aluminum holds heat with painful tenacity, as one will discover when he puts his lips to the rim of a steaming hot cup of tea. This is not so important when the mercury is dropping down around fifteen or twenty below zero, but if the outfit is to be used also in summer, the steel cups will be more appreciated.

The handles of the cups should be riveted at the top and left free at the bottom, so that they will nest within each other without loss of space. In counting noses for the cups they should be doubled up and the extra cups used for soup bowls. These outfits when bought are supplied with soup bowls only slightly larger than cups and without handles, but the absence of the handles makes them very difficult to use. Accordingly a double supply of cups should be specified and the soup bowls left out.

The spoons should be dessert spoons, one for each member of the party, rather than tea spoons, so that they may be used equally as well for soup and other purposes. Put an extra spoon in the bag of sugar.

The pancake turner should be of the sort

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that nearly every ordinary hardware store now carries, with a blade only, but no handle. It has a couple of slits in one end, into which the blade of an ordinary table knife may be slipped when it is used. If this cannot be found, buy an ordinary pancake turner with a long wire shank and wooden handle. Pull off the handle, cut the shank down to about two or three inches in length, and slip the handle back on. In going light the cooking spoons and cooking knife can be dispensed with and the dessert spoons and a sheath knife used for the purpose, but if weight is not to be much of a consideration, these additional tools will materially facilitate the labors of that unfortunate person, the cook. The table knives can even be eliminated and each man's pocket knife or sheath knife be substituted.

The dumpling pan is especially mentioned in prospect of a rabbit stew. The dumplings may, of course, be dropped into the pot and allowed to boil, but the pan is an added refinement. Take one of the ordinary plates, perforate its bottom with nail holes, and at three points around its upper edge fasten wires with hooks bent on the end to hang over the edge of the largest kettle. When the stew is going nicely and ready for the dumplings, place them on the

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perforated plate and hang in the kettle with the cover on top.

The nested cooking outfit should be carried in a waterproof bag—in a bag to keep the smut of the kettles from getting on the rest of the outfit and in one that is waterproof so that it will take up no moisture to freeze and remain as added weight. The bag, however, might as well be of light waterproof silk as of the very heavy canvas which is usually supplied, since its wearing quality is quite immaterial.

Once one has used a folding baker it will seem almost an indispensable adjunct to the culinary department. One tires of pancakes of different varieties, and while biscuit and johnny-cake and many other things can be made in the frying pan under proper manipulation, the folding baker simplifies this so much, and it has such a range of other possibilities, that it should be included whenever it can be carried. If made of aluminum its weight is very little.

When baking biscuit, place them back a little from the fire until they have a good start and then move them gradually closer, pushing them well up at the finish until they are browned to a turn. If they are kept too close to the fire in the beginning they will be forced too rapidly and will not have the gradual through and

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through baking that is so essential. The baker may be pushed close to the side of a box stove, where it will work equally well. It may also be stood directly on top of a flat topped stove, like the portable oven of a gas stove, though it will require a very brisk fire in this last position, on account of the free air under the baker, and the front must be closed with a piece of tin or other material.

If you know that you will be able to use a baker on top of a stove, a square folding one can easily be constructed of tin by any tinsmtih, on the principle of the folding candle lantern. Leave the bottom open, and have one side hinged to swing open for a door.

A useful addition to the cooking outfit is a small push-top tin holding approximately a pint. Grease from the frying pan can be kept in it without danger of getting over the rest of the outfit. Push-top tins have other purposes, and where they can be carried will find a multitude of uses. Cereal left over from one meal can be kept in them and fried at the next and they will keep all kinds of food perfectly in winter and for a reasonable time in summer. Wastefulness in food should be avoided in camp not less than at home, not because camp food is expensive in money, but because the labor of

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transporting it far outweighs its cost. This is a point too often disregarded by inexperienced campers and one or two push-top tins of suitable size will do much to avoid it. A push-top tin is also an excellent receptacle for holding the main supply of matches. You are sure to find them always in perfect condition.

By all means in winter carry a man's size axe, and if the party is at all large take another. Small axes and pocket hatchets may do after a fashion to worry along with in summer, though even then they are an abomination when one wishes to accomplish anything. Hatchets, or a small axe known as a quarter axe will do to gather boughs for a bed with, but when one goes to working up a night's supply of wood for a lean-to camp nothing but a real axe, which will give a two-handed swing, is suitable. You may get a half axe or a three-quarter axe with a helve long enough for both hands. The three-quarter axe is quite large enough, but a full axe with more weight behind the bit will make the work easier and quicker. Take a file or a good carborundum stone for keeping it sharp. If you are to be in a permanent camp, a good crosscut saw will be a great help in keeping a good supply of wood.

You will find a lantern convenient and kero-

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sene a continual danger to the outfit. Accordingly take a folding candle lantern and a supply of candles. If the camp is to be in a cabin, the long evenings will require more candles. An electric flash will be handy for poking about camp and it takes up very little room.

Other details of the party outfit are a dish cloth, dish towels, soap, toilet paper, a few nails, and a supply of boot grease. My own personal preference is for vaseline for boot grease. Melt it in a pan and rub it well into the leather. It will be absorbed and held and will keep oil tanned leather soft and pliable for a longer time in warm weather than anything else that I have used. In cold weather it freezes no more rapidly or solidly than any of the lighter weight greases. Throw into the outfit a paper or two of fairly good sized safety pins. They will find a variety of uses, in closing the tent, converting blankets into sleeping bags, or providing first aid to injured clothing.

There should be a combination can opener and corkscrew in the outfit and salt and pepper shakers. The pepper shaker can be the ordinary sifter-top can in which the main supply of pepper is bought and carried. If weight is not too much of a consideration, a small folding canvas wash basin will be appreciated in winter.

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You will like to warm the ice water from the brook before using.

The question of a thermometer, preferably of the self-registering type, has two vital and perplexing angles—to leave it at home and guess at the weather, with full play for a vigorous imagination, or to take it along for those really cold nights about which you can swear afterwards by the thermometer's unquestionable testimony.

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FOOD

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CHAPTER IV

FOOD

THE grub stake in winter should be laid out with the idea of including as large a proportion of heat forming foods as possible, with due consideration for the other elements of a proper diet. The heat forming foods are chiefly fats and sugar. Do not be led astray by the fact that you may not have cared for fats in summer or even at home in winter. In the cold and outdoor exercise of the winter camp an absolute craving for fat foods will almost certainly develop. So intense does this become at times that all Arctic explorers find clear fat, both raw and cooked, one of the greatest delicacies that can be imagined. For our winter vacation in the woods, however, the usual civilized foods which are rich in fats will be entirely satisfactory.

The variety and quantities will of course depend upon the size of the party, the difficulties of transportation, and the facilities that may be

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had in camp for cooking. Much of the camping territory of the North can be reached with comfortable outfits as easily in winter as in summer, and often much more so, and thus in many cases it will be readily possible to include a grub stake more varied and satisfying than on the summer trip. For instance, upon one of my trips I took the following list: Tea, coffee, cocoa, sugar, salt, pepper, butter, maple syrup, vinegar, evaporated cream, oatmeal, wheatena, prepared pancake flour, wheat flour, corn meal, rice, macaroni, canned corn, baking powder, currie powder, lima beans, white beans, dehydrated potatoes, dehydrated onions, dehydrated carrots, dehydrated eggs, fresh eggs, desiccated codfish, bacon, pork, sausage, ham, briskit of beef, Erbswurst soup, prunes, apricots, lemon jelly powder, hardtack, peanut butter, sweet chocolate, crisco.

This represents nearly the limit of luxury. Its other extreme would be: Wheat flour, pork, baking powder, salt, tea.

Meats will keep perfectly in winter and, if they can be carried, the unusual experience of sitting down to fried sausage or pot roast will more than compensate for the trouble of taking. Then game will add further to the variety. Rabbits may be hunted throughout

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almost the entire winter in the Northern States and Canada, and partridges may be shot in most localities until the first of January and sometimes beyond.

In many places fishing through the ice is permitted in winter, especially in lakes which are inhabited only by pike or pickerel. Lake Champlain is a stronghold of such fishing, and after the ice has become thick enough it is common to see little portable fishing huts upon it, from which lines are tended. If one camps where this is allowed, fish will add much to the bill of fare.

The best way to dress a rabbit is to pull up the skin on the back, where it is very loose, and make a long slit in it with a knife. Then grasp it on either side of the slit and pull strongly and steadily toward both the head and the tail. The entire skin will come off cleanly and quickly. Remove the entrails in the usual manner and cut off all of the thin flesh and membrane which covers the abdomen. It is also as well to discard the ribs, so that the only parts retained are the fore and hind quarters and the saddle. The intervening parts contain practically no meat and are a bit strong. The fine textured flesh of the saddles is the most delicate of all.

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Fresh eggs may seem a strange item in the winter grub list, when they are absolutely certain to freeze solid. Just peel them when frozen as you would a hard boiled egg. Then place them in the pan after the bacon is fried and watch them spread out as they thaw and fry to a turn. You will quickly understand their inclusion. If you have stood them outdoors and allowed them to freeze before starting, there can be no danger of breakage en route.

Some day make a stew of rice, dehydrated onions, and small cubes of salt pork. Let it simmer until thick and substantial. You might also add some of the dehydrated potatoes. This stew is one of the most satisfying and easiest made dishes of all the winter menu. It is hot and filling and contains heat forming elements.

It is even possible to carry fresh potatoes in winter, in spite of their freezing. It is not the freezing which hurts the potato, but the thawing and standing afterward. If you peel them while frozen and drop them into the water to cook they will be as good as ever.

Put onions and carrots in the rabbit stew. Boil rice and onions together until the rice falls apart and the mixture thickens into soup, though not into stew. A little chopped salt

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pork will add flavor. Desiccated codfish makes a good camp breakfast. Freshen it with water, thicken with a little flour, add possibly a little milk, condensed or powdered, and some of the egg powder, and serve with a winter appetite.

The currie powder is added for currie of rabbit and it may also be used to advantage with rice. Such little touches as these add much to the attractiveness of the camp fare. I am a strong advocate of cutting out everything possible and getting right down to first principles, with a tin cup and a jackknife, a small piece of pork and a bag of flour, of leaving things out to the uttermost degree and regardless of pleasure, just to find out if it is possible to stand it. Having once demonstrated that fact, either one way or the other, it seems foolish to continue when not necessary.

The canned corn is used to mix with pancake flour to make corn fritters, and the maple syrup is served on the side. Lima beans are one of the most delicious and nourishing items in camp fare. They can be boiled to a turn without previous soaking, though soaking is better. This is an advantage in winter, when the cold often prohibits soaking.

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Macaroni is in the class of light, dried foods. It sticks to the ribs like flapjacks and is easily cooked. Just drop it in actively boiling water that has been salted to taste. Then be sure that the water keeps boiling until done. If it is necessary to add more, add boiling water. You might take a can of tomatoes to season the macaroni, or perhaps a bottle of grated Parmesan cheese or some ordinary American cheese. You may also have beef tea capsules in the list. Add one or two to the macaroni. On the list may be included some canned or condensed meat soups, and if so just dump in one of ox-tail, of mock turtle or beef, and taste the result. Macaroni is a base to support the most unbridled flow of initiative and imagination and it seldom goes wrong.

Take an empty half pound baking powder can and fill it with cold oatmeal or wheatena from breakfast. Pack it tightly and wait until dinner or supper. If a nail hole is punched in the bottom of the can to admit air, it can be removed from the baking powder mold and cut into slices and fried. Serve with maple syrup or butter.

The white beans can be boiled with a little pork and eaten as they are, or they can be

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soaked, boiled until done, and then baked in the folding baker to give them the baked bean flavor. Another way is to take them from the kettle when done and heat them rapidly over a hot fire in the frying pan for a few minutes. It will change their flavor wonderfully without all the trouble of baking.

Corn meal is an excellent winter food and heating. Mix it half and half with plain flour, add salt, sugar and baking powder, and fry into pancakes. Or boil it alone, mold it in the can and fry it. Corn meal is also one of the finest foods for dogs. Make a heavy mush slightly salted, and if rabbits and other game are plentiful, add a little meat. Dog pemmican may also be carried for this purpose, and codfish for dogs is both excellent and cheap, as well as light to carry.

You will appreciate erbswurst after a long day in the snow. It is heating and filling and, unlike most soups, extremely nourishing, containing nearly every element necessary to support the body.

Beef tea is heating and stimulating, but contains practically no real nourishment. Beef tea cubes, however, are very light.

There are on the market and easily obtainable, a large number of special preparations,

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including nearly every variety of desiccated vegetables and a number of fruits, soups of all sorts, compressed tea tablets and pemmican. Pemmican is the best heavy condensed food, and pemmican and hardtack and tea are enough for any hard trip in cold weather. Jerked venison and moose meat are good, though these are harder to obtain. Egg powder and powdered milk will make excellent omelets and scrambled eggs, but it is best to test the powder before starting, as some of the brands are made of spoiled and packed eggs and the proof of this particular pudding can be found only in the eating.

Prunes and apricots are almost staples. Without fruit of some sort digestion will suffer. They satisfy that intense craving for acids which camp always brings. If you are the cook, spring on your camp mates some day the surprise of lemon jelly. Just add it to boiling water, cool it in the snow, and see what a multitude of culinary sins it will cover.

Hardtack and chocolate and peanut butter are for lunch when you snowshoe abroad. Spread the peanut butter on the hardtack, slip it inside a small food bag, and stick it in the pocket. You may be accustomed to tramping or fishing all day in the summer without lunch,

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and take pride in it. In winter it is better to bolster the strength and keep up the bodily heat with a suitable lunch.

In the check list at the end of the book the quantities of food to be taken will be indicated.

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PACKING AND TRANSPORTATION

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CHAPTER V

PACKING AND TRANSPORTATION

THERE are three ways of getting your outfit into camp. The first is to carry it on your back. The second is to draw it yourself on a toboggan or sled, and the third is to use horses or dogs. Handling a dog team, however, is a very special art, not practiced by the majority of campers for pleasure, and one that can be learned best in the Far North from the trappers and Eskimos themselves.

If your outfit goes on your back you will carry it either in a pack basket, which is the way of the Adirondacks and Maine; in a pack sack, after the fashion of certain western Canada sections; in waterproof pack bags, which is one of the most approved devices of modern outdoor America, or in a pack cloth, a method very popular in many sections of Canada, and with a great deal to be said in its favor, particularly for winter work.

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The pack basket and the pack sack both have shoulder straps and frequently also a tump line in addition. The pack bags and the pack cloth will be carried in a pack harness with shoulder straps, or with a tump line alone, or with both. The tump line is the most approved method for carrying very heavy loads, but when the same pack is fitted with both devices, it will add much to the ease of the trip, as both the neck and the shoulders may be rested alternately.

It is not my intention here to advocate any one form of pack above another for winter work. All have advantages which their users will ardently explain. Of them all, however, the pack basket is perhaps the least desirable at any time of year. It has the small neck of the pack bag without its waterproof quality. Even though it may be fitted with a waterproof canvas covering, it is inflexible and limited in capacity and chafes the back at every stride.

The pack sack is more suitable in winter. Its inside is capacious and its mouth is big and convenient. It will usually hold all the outfit that one cares to carry, and if not, the sleeping bag can be readily strapped outside. In camp everything can be found easily as needed, on account of the large opening in the top, and

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when you are through with the thing you can chuck it back inside without danger of its being lost in the snow. Since one does not canoe in winter, with the danger of upsetting, the open top of the pack sack is not a disadvantage. Pack bags should be used in winter only when they are already a part of the summer outfit. They are the very best thing for summer canoeing, but are less handy to get at on this account.

The arrangement that I have frequently used is that of the pack cloth, with the outfit and blankets or sleeping bag folded inside. Its flexibility for various sizes of load commend it strongly, and the pack cloth may be used as a shelter besides, or as a ground cloth in a lean-to or tent. The method of making this pack is to lay the pack cloth on the ground and place the blankets and sleeping bag folded once on top of the cloth. Place the outfit as compactly as possible on the blankets or bag and fold it tightly in, making the bundle of blankets or bag with outfit inside considerably longer than it is wide and thick. Then take the end of the pack cloth which runs along the bottom of the pack, and bend it up over the folded bundle. Next take the sides of the pack cloth and fold them over, or if there is much cloth, roll the

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whole pack over from side to side, keeping everything snug and tight.

This will leave the bottom of the pack cloth folded inside and the sides of the cloth lapping all around so that no snow or wet will sift in at the bottom. Fold the still open top down as a flap, just as you would the end of a paper package, with the folded flap at the side of the pack away from the back. Pass a rope or a strap lengthwise around the whole and then attach the harness with its shoulder straps or tump line. Such a pack is absolutely secure against snow or rain.

The best form of pack harness is that which is made with a broad shoulder piece shaped like a sailor's collar, the wide bands of which run well over the shoulders and about eight inches down in front. From the back of the collar about five inches apart, two vertical straps run downward about fifteen inches to the small of the back and bend up under the arms to meet the broad bands in front. There they are fastened with buckles, and the straps are made long enough to permit considerable taking up or letting out. Riveted horizontally to the straps behind, one at the height of the collar piece and the other fifteen inches lower, are two straps six feet long, which go around

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the pack. This harness may be bought of almost any dealer in camping outfits, but the collar portion of all that I have seen is made of heavy canvas. This very quickly wrinkles and draws up and cuts into the shoulders. It is far better to have it made of a very heavy piece of leather. One of these that I put together myself has been used for years and the broad bands that go over the shoulders are still as smooth and comfortable as when new. To the back of the collar should be riveted two short straps about six inches long, extending upward, as the others do downward. To these can be buckled a broad tump which goes over the forehead. It will be adjustable with the buckles or can be removed entirely.

In going into the permanent winter camp it is surprising how often one can use a horse. There are no swamps or bog holes to make soft going and a horse can be taken almost anywhere and through almost any snow, especially if some trail has been broken for him. If the snow is deep, so that a sled will not run well, take a toboggan. Often the log road of some lumber camp will help you tremendously on your way. Any ordinary toboggan will serve very well, but those that are made to carry loads will be more substantial. One that is

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narrower behind than in front will draw easier, especially if the snow is soft.

When one uses a toboggan or sled his outfit may be larger and heavier. The blankets and sleeping bag may be made all in one pack, with a pack cloth around them, and the balance of the outfit can be stowed in pack baskets, pack sacks or pack bags. Pack them as closely as possible along the bottom of the toboggan or sled, with the heavier articles beneath and the lighter, such as blankets, on top. Then fasten a long piece of rope—quarter-inch hemp is better than clothes line or window cord, as it will not stretch like the cotton—to the forward cross-bar of the sled on one side and pass it directly over the load and under the cross-bar on the other side. Then pass it diagonally over the load again and under the second cross-bar. On a toboggan with rails, pass it under the rail behind one of the many supports. Run back and forth in this fashion to the end of the load and then forward again, making certain that all of the slack is taken up tightly. If this is carefully done it will secure the outfit against any upsetting.

If a toboggan is used, take two long slim poles about three or four feet longer than the load and lash their butts firmly close to the to-

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boggan just under the roll, passing the lashing across from one to the other to prevent their spreading apart. Run them diagonally upward and backward to the end of the load, draw their ends tightly together and lash them, and secure the poles by lashing along the side of the load. This will make an excellent gee-pole for the man behind to steady the craft. A long rope should then be passed around the back of the load near the bottom and woven through the lashings along each side to the front, and then around in front of the roll of the toboggan. The whiffle-tree can be fastened to this, or a hardwood stick may be used for the same purpose.

If you are to draw the toboggan yourself the same rope can be lengthened sufficiently. It will haul easier, however, if you make a harness of canvas, like the breast collar of a horse, but with the breast piece going down about the middle, just above the hips. If too high up, the breast piece will destroy your balance and interfere with the purchase. Two or more men can be harnessed at once in this fashion, but each should have separate traces, else the uneven swaying of their bodies will break each other's efforts. This is the way dogs are harnessed in many sections of the north and the

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way Captain Scott's party drew its sleds in the Antarctic.

If a horse is used for this work be very careful to select one that is used to working in the woods in winter. Some steady old skidding horse, which you can almost always hire for the occasion at the point of departure, will be just the animal. If one is properly cautious there will be hardly any danger of injuring the horse, but if a green one is taken he will be likely to become excited and flounder about and throw himself. Go ahead and break the trail a little with the snowshoes, and a steady, sophisticated animal will then follow this trail without guidance as rapidly as he deems wise. The toboggan will ride easily in the hard packed tracks of the shoes.

Two men, one in front and one behind, can thus take a really heavy load eight or ten miles on a drifted log road, and even through much unbroken timber, with comparatively little effort. In default of a toboggan a light sled can often be secured with the horse, and it will do equally well if the snow is not too deep. But in fairly deep snow the runners will cut in and the snow will bank up in front of the load until it is almost impossible to haul it.

In packing, as in every other phase of win-

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ter camping, one should be careful never to overdo. This is particularly important in cold weather, when overheating from hard exertion, with the sudden cooling off when one stops, may prove extremely dangerous. Ninety-nine per cent. of campers both summer and winter go to the woods for recuperation as well as pleasure. They go from the inactivity of desks and are frequently muscle softened. It is a totally wrong idea of the purpose of a vacation which allows them to drive themselves to the limit of endurance and even to exhaustion.

The real problem of the camper who takes pride in his outfit, places some prayerful confidence in his cooking, and has besides some sense of balance, is rather to see just how many comforts and even luxuries he can take and find the labor of transporting and caring for them less than the pleasure they give. One may prefer to stick closer to first principles, while another will add both in food and convenience. It is entirely a personal problem and will be solved whenever the pleasure outbalances the labor.

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SHELTER AND BEDS

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CHAPTER VI

SHELTER AND BEDS

A (TIGHT) camp of some sort is by all means the most sensible shelter if one is to remain long in the winter woods. It will have far more conveniences, such as tables, benches or chairs, bunks, a stove, and perhaps even a fireplace. But far more than these conveniences you will appreciate the freedom for relaxation which the snug, closed walls of the cabin afford.

The moments when you let go at every point and loaf indolently in the comfort of the home camp are among the most delightful of an entire vacation. In an open shelter in severe weather this is never possible. The cold never relaxes and you must keep constantly on guard against it. Nevertheless the fullest taste of the wilderness comes only to him who at times meets the Red Gods hand to hand and under all sorts of conditions, in winter as well as in summer, in cabins, tents, leantos, and in hasty

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and impromptu bivouacs. Even the tents and leantos in winter may be made cheerful and comfortable until a driving blizzard sets in or one of the winter thaws commences, with its cold, penetrating rain.

The cabin may be your summer camp, furnished with stove, dishes, and beds, with blankets stowed away in tight chests, and everything except food in readiness for a flying winter visit. The winter camper is fortunate who has such a wilderness refuge. In default of this you may find some abandoned chopper's or trapper's camp hid away in the recesses of the woods and furnishing chiefly four walls and a roof. Perhaps it will have a stove in more or less dilapidated condition. It will not be large and will be easily heated. If the roof is not tight it may be quickly made so if you are able to take a roll of roofing paper and a few nails. If you know that windows will be out, take a small roll of white wrapping paper and some tacks and then grease the paper when you put it in with lard or bacon grease to give it greater translucence.

One of the buildings of an abandoned lumber camp may make an ideal place for a winter vacation. If the camp was large there will doubtless be a small building, an office which

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was used by the boss, which you can occupy. At times, however, nothing but a big barn-like structure will be available, with no small room shut off by itself. To heat such a place is out of the question, but a portion can almost always be cut off by hanging up a tent or a fly. I have frequently shut off small portions of lumber camps in this way, thus making one section by a window as warm and snug as any cabin. One should know, if possible, what he is going to before he starts and then prepare to establish himself properly.

A folding camp stove in such a place will be worth its weight in many other luxuries. They may be had in various styles and sizes, from a few pounds up to twenty or thirty.

In tents for winter use there is very much choice. The chief summer talking points hold good, such as roominess inside, ease of putting up, whether with one pole or many or with a ridge rope, and whether or not they are easily heated from a fire in front. The folding camp stove inside will be equally serviceable in any of them. In winter we must consider, in addition, the shape of the roof. A very slight slope will shed water in summer, but a fairly steep pitch in winter will catch and hold the snow until the tent sags down over one's

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head inside and cramps the room beyond all endurance.

Tents with the steepest roofs are conical tents, with and without a wall, tents in the form of a pyramid, known as miner's tents, with and without a wall; the common A tent, and certain forms of canoe and other special tents too numerous to mention. In selecting one for winter camping the steeper the slope of the roof the better the tent will be.

An excellent tent for cold weather is one known as the Baker tent. It may be opened in front along its full width to the heat of the fire and its roof is sloped at about the angle of the folding camp baker, so that it reflects the heat and throws it downward into the tent. The flat roof, however, catches every flake of snow that falls. It may be braced up effectively with a framework of poles, but I prefer to build the framework outside and thatch it thickly with boughs so that the snow never reaches the tent.

I camped one night with my wife and a friend of hers and the latter's fiancé. The girls had a Baker tent and the fiancé and I built a bough leanto. We were awakened in the night by very agonized and much smothered calls from the direction of the tent. It had begun

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to snow before we turned in and a very rapid accumulation upon the top of the tent had stretched and sagged it with such a weight that the girls, wrapped up as they were, were unable to move. We effected a prompt rescue by dragging two excited sleeping bags into the open, resetting the tent, and hauling the bags back in.

I have never yet seen a tent that worked satisfactorily with a rope ridge. They are fairly good in summer and are certainly easy to set up, but are extremely slovenly in appearance, as no rope ridge will remain sufficiently tight, especially under a weight of snow.

Instead of using a rope ridge, tents should be set in winter with a pole betwen two trees, or supported on forked sticks, and the tapes along the ridge should be tied to this pole. If the tent has no tapes, run the pole through the tent from end to end and support it at each extremity with a forked pole. Better still are two forked poles at each end, the bottoms of which are spread far apart. When the tent sags it can be tightened by drawing the bottoms closer together and thus raising the ridge. Poles spread apart in this way also add much to the stability of the tent in a wind. While this method requires five poles instead of three,

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it is nevertheless the best way to erect an A tent. It will be difficult to drive stakes in winter, but logs to which the ropes may be tied will serve nearly as well.

Tents may be heated by a fire in front, to be described in a later chapter, but they will be far more comfortable in real cold weather if supplied with a folding camp stove. For this purpose asbestos rings to receive the stove pipe can be sewed into the roof. Specially designed metal rings for the same purpose can also be secured. Tents thus equipped and pitched in a thick cover of trees are nearly as comfortable as cabins.

In pitching a tent or building a leanto all the snow must first be dug out clear to the ground in the space to be occupied by the camp. Clean and level the ground where the bed will be, as in summer, being sure to level down all hummocks with the broad part of an axe. Use the snowshoes for pitching out the snow. If it is tightly packed and there is much crust break it up thoroughly with a stick.

Perhaps last summer's leanto can be dug out and refinished for the winter camp. In building a new one, it may be that two neighboring trees with convenient crotches can be used to support the ridge pole. In default of them use

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forked poles for supports. The whole underlying theory of the leanto, in which nails and ropes are entirely unnecessary, is that of forked supports and braces. Hold up each end of the ridge pole with two forked sticks, the bottoms of which are drawn apart a little, one to the front and the other to the rear, both of the butts being placed a little out to one side. The ridge pole should be about five feet from the ground. On it lay the small ends of other poles, with their butts on the ground about seven feet back. Put several cross poles over these and thatch the whole top thickly with spruce and balsam boughs.

It is better to shingle the tops much thicker than in summer to keep the snow from sifting down. I like to put a waterproof pack cloth over the roof poles and a few boughs over that. The boughs take and distribute evenly the weight of the snow while the cloth catches any drip from snow melted by fire. The roof is pitched at about the angle of the folding baker and reflects the heat surprisingly, so that snow is frequently melted even through the cloth. The back of the leanto should be in the direction of the prevailing wind. Then thatch the sides thickly with boughs and bank snow lightly against them.

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Snow will not melt on the sides and will keep out stray draughts. A palisade of boughs banked with snow can even be built along the sides of the open space in front, between the leanto and the fire, serving as a further wind-break and increasing the sense of comfort and protection, as well as holding in a considerable amount of heat from the fire.

There is a form of leanto made with pack cloth and boughs, which I have used frequently. It uses less poles than any other and is much quicker and easier to put up. Have a long ridge pole, about ten or twelve feet long, the back end of which rests on the ground. Support the front ends with two forked poles about seven or eight feet long, the butts of which are spread far apart on either side, so as to give a clearance in front of about four and one-half or five feet. Place two other long poles with their butts on either side of the ridge and about three feet from it and let the front ends rest on the two forward supporting poles.

Throw the pack cloth over the ridge and have tapes along its sides which can be tied to the side poles. The butts of the side poles can then be driven into the snow as far apart as the cloth will permit, thus keeping it tight at

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the back, and the front ends of these side poles, in their tendency to slip down the forward supports, will automatically keep the balance of the cloth well stretched. It is also advisable to have a tape on each end of the cloth to tie around the ridge and the supporting poles and around the ridge at the back, thus keeping the cloth tight on the ridge. Thatch the back and the sides with boughs and bank with snow.

Practically this identical arrangement may now be obtained in a tent known as the Forester's tent, except that light waterproof material is substituted. Instead of thatching with boughs there are side walls which slant down to the ground and are secured with stakes or by tying to logs. These side walls make it possible to dispense with the two side poles. This is one of the latest and most convenient tents made, is not much affected by accumulated snow, and is easily heated by the fire in front. It may have a cloth front added and be used with a stove, although it is not a very conveniently shaped tent for that purpose, its chief utility being with an open fire.

Another form of shelter that is excellent for winter use is the Indian wigwam. It is made by cutting a quantity of poles about twelve to sixteen feet long, according to the height de-

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sired, and all of even length. Several of these should have very large forks at the small end. Place those with the forks together at the tops, with the butts spread out in the form of a circle, from ten to sixteen feet in diameter. Lean others into the forks until a fairly close framework is made in the well known form of the Indian tepee. Over these spread a covering of canvas or old tenting, or, if you like, have a light waterproof cover specially made for the purpose. It may be tied to the poles at the top with a tape, though this is not necessary.

Over the outside of the cover lean other poles to hold it down in the wind. Bank around the bottom with boughs and snow to prevent draught on the floor. Have a flap for a door. If the covering is not carried too close to the top, or if it is made with a flap at the top which can be thrown back with a pole, the fire can be built in the middle of the tepee and will ventilate perfectly through the opening thus made, if the flap at the door is left open a trifle and the fire is kept going with good wood. But the ventilation at times will be abominable. The remedy is to use a folding camp stove with a stove pipe going out at the peak. The tepee is then in fact a conical tent with a perfectly

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stable framework effectively supporting it against the snows of the heaviest blizzards.

Beds in winter should be even more carefully made than in summer. Sleeping on the bare ground will do in warmer weather in case of absolute necessity, but in winter when cold is added to aching joints the last comfort is removed. And you surely will be cold if you touch the ground at any spot. The bed should be soft enough to support the body at all points and thick enough to prevent it touching the ground at all.

A good bough bed affords another example of the virtue in dead air space. The confined air in the matted needles is an excellent insulation against the radiation of bodily warmth downward. If you touch the ground or floor at all, heat will disseminate directly at each contact point. A layer of fine light boughs on top of the blankets will decrease the circulation of air above and thus lessen radiation. On chill summer nights I have slept warmly in bivouacs with no covering but a blanket of balsam boughs. If the camp is in a cabin, beds in bunks or on the floor should be made with no less care. Beds made in snow depend for their underneath insulation entirely upon the blankets and furs.

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My method of laying a bough bed is somewhat unorthodox. Kipling tells of "A couch of new pulled hemlock," and nearly every writer upon camping has laid emphasis upon the fact that the boughs should be very small. I prefer rather to cut down small trees and to take practically all of the branches from top to bottom, though if the bottom ones are too large, with very heavy butts, I clip them off a little. Balsam is the best, as it is always soft to the touch and very fragrant. Hemlock is good, but more of it is required. Spruce comes next and is almost as satisfactory as balsam, but will hardly scent up your blankets to shed their fragrance on the common air of the closet at home.

Begin by laying the larger boughs at the head with curved side up and the butts toward the foot. Put several layers of them across from side to side, before working downward at all, then drop toward the foot with still other layers, the soft tip ends of which will lap thickly over the springy bows of the boughs in the layer above. Continue in this fashion to the foot of the bed and then stick the finest boughs upright as thickly as possible over the whole, but with their tips inclined slightly to the head. The matted needles on the ends of

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CAMP FIRES AND STOVES

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CHAPTER VII

CAMP FIRES AND STOVES

IN winter in the open tent or leanto you will conserve as much heat from the camp fire as possible. That which goes up is lost, but it can be reduced to a minimum by placing the fire as close to the front of the camp as possible and having a rather steeply pitched roof which will catch and reflect the heat waves that go diagonally upward. The heat that would ordinarily spread on the side farthest from the camp can be thrown almost entirely backward into the structure.

For the fireplace stand two heavy green sticks at a very slight angle about four feet apart in front of the camp and as close as it will be possible to have the fire. Brace them behind with other heavy forked sticks and pile against them in front about four or five logs, one above the other. These logs should be cut from green trees. Build the fire against them. They will burn slowly and throw into

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the camp practically all of the heat which does not go straight upward. Better than this, face the camp against a big rock if one is available.

Wood that has been long dead and subjected to moisture will be partially decayed and will have lost much of its heat. Fire is simply a rapid decomposition of the substance into its elements, with resulting heat, and it is accordingly obvious that if much of this decomposition has already taken place the heat will be reduced.

There is more heat in green wood, when once it is properly burning, than in old, partly decayed, deadwood, but even the latter is good when the fire is well started, and it will often be easy to find. But be sure to have a quantity of green birch, beech, or maple to pile on the fire before crawling into bed. It will keep going for much of the night.

Getting a fire started easily and well is the mark of a woodsman. Your amateur will be hurried in his preparations. The woodsman proceeds with apparent leisure, searching about in the surrounding woods and even going some little distance from camp, until he has found just the sort of kindling which he wants. He will pull bark from the trunks of birches, a considerable quantity of it, and break off the

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dry stubs around the butts of the spruces. The branches from a dead evergreen or from the bottom of a live tree, which are thick with brown withered needles, give a quick, fierce heat. Perhaps a dry stub can be found that can be split into kindling, and it may be that a down softwood tree will furnish similar material. In the absence of birch bark or of branches with dry needles, the dry dead branches and soft wood may be whittled into shavings with a pocket knife.

Be sure that you have a considerable quantity of this preliminary material and that coarser wood is ready at hand. Then lay the shavings and fine tinder against the big logs and place dry, fine wood over them. Build it up in a sort of rough crib or framework with air space between. The greatest need of a fire, next to fuel, is for air.

In doing this remember one of the fundamental characteristics of fire, that it is a natural climber. The little flames shoot upward, and if they have nothing to play upon their energy is lost. Accordingly, have enough fine, dry material above your kindling to catch the first feeble flames of your fire and convert them into more fire. When all is in readiness, and not before, apply the match.

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Now watch the fire gather headway. It will spread rapidly through the bark and tinder and lick upward over the fine cribbing. Here and there a little flame will break out between the sticks and shoot skyward, with nothing above it. Be ready with other small stuff to close up the gap, not fully, but just enough to catch the energy of that fugitive flame. As the fire gains headway add other fine wood. Then presently you can begin with the coarser. If you have gathered your material intelligently and laid the groundwork with craft, you will have a full fledged camp fire going in a very few minutes.

But here should be added another characteristic of the fire. A fire loves organization. Fire rouses fire, and heat from each little stick sets its brothers aglow. Give it plenty of time to do this. Too often the novice will putter and poke until his fire is discouraged and dies utterly. Give it a fair chance. The time will come soon enough when its close organization will have burned out its heart and a revolution must take place. Then supply your agitation with intelligence and plan, with proper regard for the fire's tendency to climb, for its need of organization, and for the addition of new material.

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The cooking fire differs materially from the fire intended solely for heating. A fire which consists largely of roaring, crackling flames is not only harder to work over but gives a very uncertain heat. One moment it will set your pot boiling furiously or will heat the frying pan until the grease catches fire and burns the contents to a cinder. In a moment more it will have died down so that you have to lower the pot or add fresh fuel. The ideal cooking fire consists chiefly of coals, with very small flames, so that the conditions of the stove are approximated. It will be still more convenient if there is a large log in front as well as behind to throw the heat more directly upward for quick cooking.

These conditions you may get in the open winter camp by raking a part of the larger fire to one side of the fireplace. Thus you will have everything from a bed of coals to the actively flaming wood, and you can replenish the coals from time to time by raking out others. Green wood makes excellent coals, but if you can get some of the bark from a dead hemlock tree put that on your cooking fire. It will make a hot lasting bed which will not smoke.

The most important adjunct of the fire for cooking is a suitable crane to support the ket-

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tles. The simplest arrangement is that of a long pole slanting over the fire, on the end of which a kettle may be suspended. Place the pole to one side, with its butt under a heavy log, and place another log or a forked stick under the pole at a point which will raise the tip just high enough above the fire. It may even be possible to drive the butt into the snow at one side of the fire, but the snow is likely to give at an unfortunate moment.

The most satisfactory crane is made by standing two forked sticks upright in the snow at each side of the fire and laying a long pole in their crotches so that it passes over the fire. If the snow is too soft the supports may be braced at either side. The kettles may then be slipped on this pole from either end. They will be hard to get at, however, and cannot be raised or lowered to suit the need. Instead of hanging them directly on the pole it is better to cut several forked sticks with one side of the forks only three or four inches long and the other side from a foot to two feet in length. At the lower end of the longer side cut a deep notch with a knife, in which to suspend the bale of the kettle. The other side of the crotch can then be hooked over the pole on the crane and removed at will. By having several

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forked sticks of various lengths the kettle may be raised or lowered and thus made to boil slow or fast. It can also be moved to one side of the crane, away from the intense heat of the fire, where its contents may be kept hot until everything is finished.

Stoves for camp use are of many kinds. There are small box stoves made of light weight sheet iron, with one or two lids, the stove pipe for which may be taken apart and packed inside the stove. Others have telescopic pipes with the largest section at the base and the smallest at the top, the upper sections of which collapse inside the base section much like the sections of a collapsible drinking cup. Then there are folding stoves, the sides of which are hinged, so that they may be folded flat. They come with and without legs, and some are made even without bottoms. These latter must be placed flat on the ground. They may be bought of most sporting goods dealers, or any camper can easily design one for himself and have it made by any tinsmith. The pipe may be as small as four inches in diameter. A mere sheet iron box without a bottom or lids will be cheap and very satisfactory for heating. A slide in one end to receive the wood will serve as a door. It can be lifted

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up slightly for a draught. In the other end there should be a collar to receive the pipe. This collar may be extended into the stove for a couple of inches and thus do away with projections on the outside.

Another form of stove very convenient for heating the inside of the tent can be made in the form of a cone, the top of which is continued into the stove pipe. Have a door hinged on to receive the wood. A very small stove of this sort will prove a tremendous heater.

Another stove, somewhat similar, can be bought at the dealers, but instead of being made in the form of a cone it is a small cylinder of sheet iron with a top and one lid and a slide for a door. It is an excellent heater and the lid adapts it for cooking. It has no bottom and the cooking outfit and other articles may be packed inside.

Then there are kerosene, gasoline, and alcohol stoves which are excellent for cooking. Some of them are also fairly good heaters. Their styles and merit are many, and I shall not attempt to discuss them here. Look them up in the catalogue of any good dealer and take one that seems to best suit the purpose and that is guaranteed, provided you are to be

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in a place where it is impossible to obtain wood. But if you may rely upon wood, by all means do so, as it saves space and is a far better heater, besides being infinitely more cheerful.

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SNOWSHOES AND SKIS

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CHAPTER VIII

SNOWSHOES AND SKIS

SNOWSHOES are as diverse in type as the Indian tribes from which they came. Not content with this multiplicity of form, the white man has added a few of his own. Roughly classified, they are of two main types, the long rangy shoes for straight away traveling and racing, and the stubby, almost round shoes for getting about in thick brush. The latter are sometimes called bear-paw shoes from their similarity to the pads of a bear. Both types shade into the other by such easy gradations that one may find a shoe for any sort of work or personal preference.

The problem of selection may be stated as follows: For absolute utility in getting about with the greatest facility in any sort of cover, including the very thickest, use the nearly round bear-paw shoes. They have no tails to catch in the brush, or to knock upon surrounding trees when you attempt to turn short

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in your tracks. Leaving this extreme, as the shoes are wanted for more open places, more straight away traveling, or even for racing, you will select those with a tail. The tail will become elongated, the width of the shoe will decrease, the length will grow rapidly, until at last you have a long, slim racer five feet over all and a foot in width.

Only it is well, however, to avoid extreme. If hunting is to be the chief diversion, so that the shoes will be used mostly in thick swamps, the bear-paws are best. They are very satisfactory for any fast traveling. Since they have no tail, with its weight behind to balance the shoe, falls are more likely to occur with them. Shoes of from forty-two to forty-eight inches in length, such as are regularly stocked in the sporting goods stores, are far more suitable for general utility.

The weight of the user determines the size of the shoe. A person much under 140 pounds will use boy's size or larger shoes up to ten inches wide by forty-four inches long. One of 140 pounds will require shoes 12 x 42 inches. A person of 180 pounds will require the 13 x 46 size, while one of 220 pounds must have shoes 14 x 48 inches. The type of the shoe selected may vary these dimensions ma-

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terially, but the product of these two factors, approximately 450, 500, 600, and 675, respectively, may be taken as guides.

Look well to the structure of the shoes that you buy. The frames and cross bars should be made of clear, straight grained white ash or other tough wood. If any cross grain appears reject them at once. Be careful of selecting frames that are exceptionally light. Examine the mortising of the cross bars into the bows and be sure that the bows are heavy enough to prevent breaking down at these mortised points. You will step on many places in the woods, such as fallen trees and half covered stumps, where your shoes will have support at only a couple of points, and if your frames are too light and flimsy they will buckle and break.

The best webbing for snowshoes is made of caribou rawhide. It is tough and durable and less given to stretching than any other material, but is far harder to get. Most commercial shoes are filled with raw neat's hide, which is raw cow hide, and if this is of good quality it will be very satisfactory. See that the webbing in the middle of the shoe between the two cross bars is heavy and closely woven. That at each end may be lighter. A large, open weave will be satisfactory on heavy, well packed

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snow, but in lighter snow the smaller the meshes the better.

Some shoes have an exaggerated curl at the front. A little bend is desirable and necessary, prevents stumbling, and helps to keep the snow from piling up on the front of the shoe.

Before buying your shoes lay one on the floor. Place the fingers under the webbing at the toe hole, at the point of bearing for the toes, and lift up to test the balance of the shoes. Only the front should come up and the tail should remain securely on the floor. If the shoe is so evenly balanced that the tail has small tendency to remain down, get another pair. The snowshoe stride requires the bulk of the weight behind the point of support for the shoe. Otherwise the toes will dig into the snow and trip you, especially if you attempt to run. Obviously bear-paw shoes, which are more evenly balanced, are not open to this test. The weight at the rear must be enough, so that the slight inflexibility of the shoe lashing will not counteract it.

Always carry with you into the winter camp a supply of rawhide for mending breaks in your webbing. Carry also in your pockets at all times several pieces of buckskin thongs or lamp wicking, so that if the fastenings of

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your shoes wear out or the harness breaks they may be quickly replaced. Rawhide belt lacing will do for the repairing.

The thongs or lamp wicking for binding the shoes to the feet should be at least half an inch wide. The length will vary according to the method of binding. There are as many of these methods as there are shoes, or more, only two of which I shall give. The first is the simplest and most generally used and is quite satisfactory.

Let the ends of the thongs be known as A and B. Pass end A downward on the left side of the foot and B downwards on the right side. Bring the ends upward through the large toe opening until they are both even and the loop over the toe is small enough to prevent the toe from sliding forward onto the cross bar. With both A and B, respectively, take several laps around the toe loop on each side of the foot. Then pass A diagonally across the toe and around to the back of the ankle on the right hand side of the foot and B diagonally across the toe and around the left hand side of the ankle. Tie A and B together into a bow in the hollow just above the heel. It is important that A and B be passed around the foot on the sides opposite to where they are threaded

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through the webbing. Otherwise the lashing will be much less secure and command over the shoe will be less perfect. With the foot removed from the thongs the lashing can be tightened without untying the knot at the back by simply taking extra turns around the toe loop. When soft moccasins are worn it will be possible to slide in and out of the lashing with the utmost ease without ever untying the knot.

The second and more intricate tie requires two thongs, the ends of the longer of which we will call A and B, while the ends of the shorter will be C and D. This method can be learned best from this description with a snowshoe and two thongs in hand.

Thread A from the top down on the left hand side of the foot. Pass B around behind the foot, in the small hollow above the heel, and thread it from the top down on the right hand side of the foot in similar fashion to the end A. Then bring end A upward and backward diagonally over the toe and around on the right hand side to the back of the foot. Similarly bring end B diagonally over the toe, crossing *over* A, and around on the left hand side of the foot to the back. Take a turn with either A or B around the thong already in the

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hollow above the heel and then tie both ends in a bow knot. Then take another thong, called the toe piece, and pass one end, C, downward through the webbing on the left hand side of the toe. Bring it up and pass it across the toe *over* the thong B and *under* thong A, keeping on the instep side of the crossing points of A and B. Pass it down through the shoe on the right hand side of the toe, up through the toe hole, and return the end across the toe, passing it *under* A and *over* B. Tie C and D in a bow knot, drawing the knot tight enough so that the toe cannot slide forward onto the cross bar.

This method of tying with a separate toe piece draws the lashing over the toe closer together from the sides, the tighter the ankle piece is drawn. Thus in order to keep the toe from sliding forward to the cross bar it does not rely chiefly upon drawing the toe lashing closer to the webbing, but decreases the side play as well. It is a more complicated tie, but more satisfactory, and in its greater security gives much better command over the shoe. If strips of cloth or lamp wicking are used, as is now a common Indian custom, the whole binding may be instantly tightened without removing the foot or untying the knot by simply

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taking the two strands at each side of the foot and where they are tied at the ankle and twisting them together.

The usual way of tying a bow knot is to twist the ends of the thongs about each other once only, to then make a bow in each end, and to give the bows but one turn about each other. Make two turns at each stage of the knot and it will never untie of itself, though it will give as easily as ever when the ends are pulled.

Harnesses for fastening the shoe to the foot are legion. Practically every sporting goods store has one which it will earnestly assure you is the only perfect harness ever devised. It is well to take this assertion with a considerable grain of salt. Most of them do, however, have some merit, largely because the fastening of the shoe to the foot is so fundamentally simple. Only two of those harnesses I shall attempt to describe.

To make the first cut from a piece of fairly heavy leather a strip for a toe piece, two inches wide and three and one-half to four and one-half inches long, according to the size of the wearer's toe. At one end on the top side sew or rivet a strap five-eights of an inch wide and seven inches long. To the other end rivet a similar strap, to which a buckle is to be at-

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tached. Before attaching the buckle slip over the end of the strap a small iron ring, the inside diameter of which is about five-eights of an inch. Slip a similar ring over the strap on the opposite end. Bend the straps back flat over the toe piece and buckle them. Then with lamp wicking or rawhide the two rings can be tied to the shoe at the points on each side of the foot where the thongs are ordinarily threaded.

By buckling the straps tighter the toe piece will be drawn closer to the webbing, thus making the opening for the foot smaller. To hold the foot under the toe piece other straps are riveted or sewed to the ends of the toe piece at right angles, which pass around the hollow above the heel and buckle at the outside of the foot. A disadvantage of this harness is that the iron rings quickly wear both rawhide and lamp wicking through and they have to be very frequently replaced. This wear will be much decreased if the ring itself is thoroughly wound with either lamp wicking or hide.

The other harness is made by sewing a piece of leather in the form of a socket, or toe-cap, about three inches deep, which will just comfortably receive the toe of the foot. The sewing should be along the top of the toes rather

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than underneath. This toe piece should be open at the front and should be small enough so that the foot cannot slip forward. It is lashed to the webbing of the shoe with thongs laced into its front end. Straps sewed or riveted at the back will then pass around above the heel to hold the foot in place. Thongs may be substituted for these straps if desired. I have always found this an extremely satisfactory harness, as never by any amount of hard use or wetting can the toe socket stretch enough to let the foot slip forward beyond its proper bearing point on the web of the snow shoe. Possibly snow packs under it more readily than under moccasins alone, but I have never found this objection very material. In making harnesses of this sort, toes of an old pair of oil tanned moccasins could be made to serve very well.

The snowshoe stride is extremely simple. In ordinary walking the heel is only slightly elevated and at one point in the step is much lower than the toe. In the snowshoe stride the heel is raised first, and with it still elevated above the height of the toe, the whole leg is lifted upward and thrown forward. The heel comes down to the shoe again only after the shoe has been planted at the end of the step.

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If the heel is kept too low it will dig the tail of the shoe deeper into the snow when the toe is raised, making progress almost impossible. There is just one stride that can be used to advantage and that will come instantly if the single caution to raise the heel first and keep it raised throughout is observed.

Let the hip action be loose and easy and keep the knees just sufficiently bent to give freedom to the swing. If the shoes are well "balanced" the tails will drag while the toes will rise high in the air. Any shoe that does not do this, unless it is the special bear-paw shoe for special work, is an abomination and even a danger.

At times a fall will be unavoidable. When it is, let go and fall easily, without straining. The snow is soft. As much as possible avoid going close to evergreen trees, under whose buried lower branches the snow may be light and unpacked, so that it will give way beneath you. Use a stick to help climb the slopes. In going down where the snow is crusted never slide, as it will wear out the webbing of the shoes.

Skis are not suited to most of our northern country where winter camping is done. They are rather for winter sports in more open sec-

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tions. Nevertheless, many places in the Far West are open enough so that they have come into quite general use for work as well as sport.

The length of the skis should be such that when they are stood upon end the wearer can just reach their tips with the ends of his fingers. Their width should vary, from between three and three and three-eights inches at the rear to between two and three-quarters and three and one-eight in the middle, and three and a half to four inches at the front. The thickness will be greatest in the middle, where the width is least, being at least one inch and sometimes as much as one and three-eight inches. At either end the thickness will range from three-eights to half an inch.

The skis should not lie flat on the snow, but should have an upward arch just back of the middle, clearing the snow by not more than an inch. This gives them greater spring, but it should not be exaggerated. Similarly, the upward curve at the front should be gradual and not excessive. One, and possibly two, grooves should extend under the entire length from front to rear, to prevent the skis slipping sideways. The wood should be white ash or hickory, fully seasoned and absolutely straight grained. The slightest cross grain may result

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in a break and an ugly fall on a steep hill.

The proper position for the binding is over the arch of the ski. To protect the ski a thin metal plate of brass or zinc is screwed under the binding for a foot rest. Some skis have a rubber protection, but this is less satisfactory, as it holds the snow. Rubber grips the foot better, but a proper binding is secure without it. Bindings for skis are of as many types as ties for snowshoes. You will either take what you find on the skis when they are purchased, or specify a special binding. In the latter case, the Hoyer-Ellefsen binding will fill every requirement, and carry besides the endorsement of most expert runners in this country. These requirements are as follows:

FIRST: The binding must fit the shoes worn with the skis. It must be so adjusted that the toes will pass under the toe piece only to the roots of the toes, so that if the wearer falls forward the foot can bend at the toes and thus avoid a possible broken leg. This freedom to bend at the toes should be enough to allow kneeling on the skis with the binding attached. The heel adjustment must be snug enough to keep the toe from sliding backward in the toe piece, else loss of command over the skis will result.

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SECOND: The binding must not permit more than a negligible lateral play, or control will be lost.

In the Hoyer-Ellefsen binding a piece of strong, heavy belting is screwed firmly to the ski at the forward end of the foot plate and extends back under the arch of the foot to about the front end of the shoe heel. Just back of the forward end of the belting are the toe irons, fastened directly to the ski and coming up high enough to catch the side of the shoe and prevent side motion. Fastened to these irons is an adjustable strap which goes over the toe. An iron band is riveted to the other end of the belting, its ends being turned up on each side of the heel. From holes in these turned-up ends an adjustable strap passes around back of the foot in the hollow above the heel. The metal heel piece prevents lateral play, and the heel strap keeps the shoe always forward in position under the toe piece.

The really complicated technique of ski running requires a book by itself, but the absolute essentials may be briefly said to consist of the straight ahead glide, the fish-bone step for going uphill, the side-step uphill, the kick turn for making an about-face from standing still,

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and the Telemark turn when going at considerable speed.

The straight ahead glide is much like that of skating, except that the ski is pushed straight ahead instead of at an angle, never leaves the snow, and is kept at all times in a line parallel and very close to the other ski. In going uphill the fish-bone step is taken by turning the skis out at an angle, the point being at the rear. The steeper the slope the wider the angle needed to prevent sliding back. In taking this step bring the point of the ski down smartly on the snow and hold it there until the ski is again lifted for the next step. Gentle slopes may be taken with the straight ahead step by thus bringing the ski down strongly, with the greatest pressure on the toe, and somewhat steeper slopes may be handled in the same way by zig-zagging up them. The side-step is simply what its name implies, a slow and laborious method of getting up very steep hills.

To make the kick turn raise one leg in front of the body until the ski is vertical, with its end on the snow. On this end as a pivot, swing it outward and downward until it strikes the snow with its front to the rear and its length parallel to the other ski. Thus one foot is pointing forward and the other backward. At

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once swing the other ski around parallel to the first, and the turn is completed.

If the Telemark swing is to be made to the right, advance the left ski until the left foot is even with the bend of the right ski, throw the weight on the left ski and depress its inner edge. At the same time turn the heel of the left ski outward. It will retard the speed and throw you around to the right. Lean inward to maintain the balance, and keep the weight off the right ski. Make the Telemark to the left in opposite fashion.

The Telemark swing is essentially like the similar quick turn in skating. In fact, much of the technique of skating is used in skiing, with suitable adaptations, such as bringing the points together to stop quickly, gliding straight ahead with the weight on one ski while the other is turned out ahead for a brake, and so forth. As in skating, lean forward rather than back, keeping the weight more on the toes than on the heels. It is extremely important that the skis be kept close together, and in coasting down hill they should touch. The correct method of executing this last maneuver is to advance one ski a little ahead of the other, bend the rear leg slightly and keep most of the weight upon it, and keep the body thrown

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somewhat forward. The pole should trail behind and to one side.

I have left the ski pole until last, to emphasize that it is a mere adjunct in skiing, rather than an indispensable balancing pole. It will help in climbing hills, will serve as a brake in going down, and will assit in balancing simply because you happen to have it. If you cannot balance perfectly without it, you have not learned to ski. The stick should be shoulder high—not long enough for a balance pole—and should be fitted with a good steel point, a snow disk a few inches above the end, and a wrist loop at the top. The disk will prevent the pole sinking in too deeply in soft snow, thus giving more purchase. Two ski poles will be more helpful in hill climbing. The best material is bamboo, combining strength with lightness.

Unlike snowshoeing, skiing requires much practice. Go at it painstakingly, with regard to form. It is the only way to become proficient. The above instructions are a mere beginning, sufficient for simple traveling, but neglecting the finer points of the sport.

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HINTS AND HELPS

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CHAPTER IX

HINTS AND HELPS

IT is common knowledge that in treating frost bites one should take a handful of snow and rub it vigorously upon the afflicted spot. But it is just this sort of little knowledge which is an extremely dangerous thing. One may crack or abrade a portion of the frozen skin in this manner. Frost bites should be guarded against with the utmost care and if one is properly equipped they are not likely to occur, except in far northern sections where the cold is most intense. But when they do come, handle them delicately.

The object to be attained in treating a frost bite is to "draw out the frost," which means to *put in the heat.* This should be done very gently and gradually. When snow is used it is held on the part until it melts and gives up some of its meager supply of heat to the frosted area. The manipulation of gently rubbing with snow also coaxes back a supply of

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blood. All this is done with the temperature just barely above the freezing point and thus works no injury from the too rapid application of heat. The normal heat of the body upon the frozen spot, however, is not too intense, and accordingly the Eskimo method of holding the hand to the frozen place until it thaws is, as Dillon Wallace has said, far superior to the rougher treatment with snow.

Frosted toes and feet can be gently rubbed with the hands. If you are on the trail and suspect that your feet are becoming frost bitten, do not delay. Get out a blanket, if possible, remove the shoes and socks, and manipulate the affected portions within the folds of the blanket. If no blanket is available, use a coat or a sweater or a couple of coats. Do anything rather than go on with the feet getting colder and colder.

Hands may be thrust inside the clothes. A piece of fur or cloth attached to the hat, so that it will rest on the forehead, will protect that member, and the cheeks can be looked to with the hands. If you are troubled with a cold nose at night, take a small piece of adhesive tape and a little wad of absorbent cotton from the medicine kit. Lay the cotton upon the nose and secure it with a piece of the tape.

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It will protect the nose absolutely and will be far better than breathing over and over again the stale air of the blankets or bags. One of the conditions of warmth is a state of high bodily efficiency. This can never exist long without fresh air for the lungs.

If you are camping where no water is available and snow must be melted for cooking and drinking, it will be an added chore to melt enough more for washing. Instead, take a cake of soap and a big handful of snow and go through the motions vigorously. The snow will melt and work up a lather which will be as effective as one should decently expect in the winter, and it will not be particularly cold, but—now lay the soap aside and grab another big handful to rinse off the lather. It will drain every last wavelet of heat from the tips of your fingers and send you dancing in franctic haste for the towel. If you are a born winter camper you will then go back and try the same stunt on the face. This may not be as cleansing as a plunge in the lake in July, but it is one of the most refreshing morning toilets that I have ever experienced. Perhaps a dip in the snow, after the manner of fiction, would be proportionately exhilarating, but I have never developed that much temerity.

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You will want a medicine kit in your outfit. Let it contain a cathartic and a remedy for diarrhea. Lapactic pills are small and good for the former, as they act on the liver, and Sun cholera tablets are excellent for the latter. Other medicines will depend upon the personal needs of the individual. Materials for treating wounds, sprains, fractures, and burns, however, should by all means be included. They may be found in one of the convenient little first-aid packages to be obtained of all drug stores, or some more elaborate outfit may be made up for the purpose, or suitable outfits especially designed for campers may be obtained from the dealers in sportsmen's goods. A full discussion of this important subject will be found in *Backwoods Surgery and Medicine,* by Charles S. Moody, M. D. No camper should go into the woods either winter or summer without a fairly comprehensive knowledge of emergency treatments for accidents and the more common ailments.

It is of much more importance in winter than in summer that unimportant bodily depressions be met and counteracted and that the little details of personal comfort—not personal luxuries and extravagances—be all well looked after. Each drain on the strength is a drain

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on the resistance of the body to cold. Accordingly do everything decently and in order. If you are moving about from camp to camp, begin preparations for the night in time to have them all completed before darkness shuts down. Have extra wood for a fire at hand, the bed soft, and if the camp is a leanto or bivouac make it as snug and comfortable as possible. Eat regularly. Above everything else do not overdo to the point of exhaustion.

Keeping direction in winter is in many ways much simpler than in summer. You can see farther through the trees and always in fair weather there is the back track to the camp. Nevertheless it is important to keep the mind always upon the problem of direction, and never to rely exclusively upon that trail in the snow. When far from camp, a driving storm may shut down out of a fair sky and obliterate the trail before the tracks can be retraced. The safeguard is to know where you are and to have the compass directions clearly in mind. If a bad storm begins, consult the compass at once and make an extra effort to keep the organization of your territory well fixed in your head. This will be greatly facilitated by a map. If one is issued, always have in your pocket a copy of the Geological Survey map

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for the locality. Otherwise get the best that is available. If you are far away and the storm is severe it may be advisable to return. You may decide to take a short cut. If you are sure of your direction, do so; but if not, by all menas hit the back tracks, even if it does mean staying out a little longer.

You may become lost from a dozen different causes. If so, do not become alarmed. Work the problem over slowly and carefully and when you have decided upon a procedure carry it out with the utmost decision. Many a lost person will decide upon his plan of action, follow it frantically for fifteen or twenty minutes and then abandon it for another. After two or three such changes he is more hopelessly lost than ever. Accordingly do not change your plan until you have decided, from abundant evidence, most thoughtfully considered, that it was wrong.

Remember that snowshoe tracks, even though deeply snowed in, will still be visible in spots from the very slight depressions where the snow has drifted unevenly. Remember also that a bivouac in the woods and in a howling blizzard is feasible and not even particularly dangerous if gone about in the right way. If you know you are lost and have no definite

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idea of the direction of camp, quit early and bivouac for the night. Dig a hole in the snow with your snowshoes and make as good a shelter as possible with boughs either cut or broken from the spruces. Break off all the dry dead limbs that you can from surrounding trees and break up all the dry stubs you can find. If you have an axe or a hatchet, chop down some small green saplings. It is always a good plan to carry one of the safety pocket axes in winter, not for general utility, but simply for emergency. Make a fire in one end of your hole in the snow and pile on some green wood. You need not cut the green wood very short, but when it burns at the ends push the pieces again over the flames. Do not make the fire too large, and keep close to it. It will be warm enough, will save much wood, and economize your strength in proportion.

In the morning tackle the problem again, and if you are really, truly, and completely lost, go at it by a process of elimination. Just how you will work out this elimination depends upon the lay of the land and how clearly you have certain features of it in mind. If you have left your permanent camp in the morning and become lost the same day, you can weather practically any kind of a night in the woods and

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almost invariably find camp before the next night—if you keep your head.

Above all things, if you are lost alone, do not allow yourself to become drowsy and go to sleep in the bivouac. Keep awake at all costs. Walk around the fire. Go out and rustle more wood. Do anything rather than allow that soporific mantle to fall over your head.

A friend of mine once started in winter to cross a pass in the Big Horn Mountains. At the last moment he was joined by a Swede, whose name he never learned, but whom he immediately dubbed Shorty. They became lost and dropped down into a canyon. A terrific blizzard had set in and they had neither blankets nor food. It was frightfully cold. They gathered a lot of dry lodge pole pines and built a fire against a big rock. Then they placed a few poles on the snow close to the fire and Shorty lay down to sleep. In a few moments my friend spoke to him.

"Wake up, Shorty," he said.

Shorty slept on.

"You ——— ——— — — — ——— ———!"

Still Shorty slept.

More adjectives followed and a prod in the ribs. Shorty grunted, sat up, and swore in classical Swedish.

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"All right, Shorty, go back to sleep," said his watchful partner.

Alternately Shorty was cursed at and prodded until he had snatched some two or three hours of doubtful rest. Then places were exchanged and my friend slept fitfully, while Shorty swore and kicked.

He says that when Shorty woke up and cursed back it was music in his ears.

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WILD LIFE IN WINTER

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CHAPTER X

WILD LIFE IN WINTER

THE white page of the snow makes an admirable guest book to record each visitor to the winter camp. Where scraps are thrown out the tiny tracks of chickadees, blue jays, snow buntings, and other hardy lovers of the north country in her sterner moods will quickly multiply. The birds will soon learn that their presence is desirable and make little effort to fly away till one comes quite close upon them. With some patience they may even be tamed absolutely in a few days. Hang up a piece of suet or other food on the side of the camp and see how quickly the blue jays and chickadees cluster about it. Sprinkle a few crumbs on the snow close by and when these are gone throw out a few more. Be careful never to satiate the appetites of the birds, and when they are about gently drop a few crumbs at your feet. Make no sudden movement and their assurance will grow tre-

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mendously. Then stoop close to the ground and hold crumbs in the hand and drop just a small sprinkling on the snow. Almost before you know it one will make a venturesome foray for the larger supply and shortly they will perch on your fingers as though you were an old friend. If the crumbs are large the chickadees will fly with them to the limb of a tree, where they will hold them between the limb and one foot and pick at them until they are small enough to swallow. But if you break the crumbs finely enough they will remain on your hand until all are gone. Red squirrels may be tamed in the same way.

Four-footed visitors to the camp will be less frequent, but you may be sure that Reynard will have been about in the night. If the camp is in a cabin in a clearing he will have come out of the woods where shelter afforded, along a snow-drifted fence or a fringe of bushes, and will then have gone back much as he came, seeking cover at every point, to earn his breakfast honestly among the big white rabbits of the swamp. Like a neurasthenic, which he is not, he has a well marked dread of open places and much prefers the protection of some overhanging fence or concealing hedge when he makes a raid out of the timber to forage

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abroad. Accordingly, in more settled localities, his tracks are often found along drifted fence lines, public highways of so many creatures of the wild whose business takes them into the haunts of man.

But in the woods Reynard's affairs are spread out upon a broader scale. His lines of control are drawn upon every elevation and slope, and follow into each nook and cranny of the forest, until we may be sure that little has gone on there which has escaped his astute espionage. It is interesting to pick up the thread of his wanderings and follow its twists and turns. It is quite unmistakable. One footprint falls almost squarely in front of another, making a clean, straight line, and indicating a preciseness of body quite in keeping with his well known habits of mind.

Often he travels aimlessly, winding in and out, doubling and circling, or walking straight up the trunk of some fallen, inclined tree for a better view at the top. Again he has an errand of much importance which takes him straight away over ridge and valley to some far swamp. There after a little he appears to have been joined by other buccaneers of his color, so much have his tracks multiplied, and to have investigated every rod of the cover and run

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down every beaten pathway of his quarry. In a single night he can make a fair sized rabbit swamp look much like your own city backyard when it has hemmed in the activities of a lively terrier.

Those same rabbits that interest Br'er Fox so intensely are themselves prolific track makers. On moonlight nights after a fresh fall of snow has cleaned the forest floor, they come out in force to reopen their old runways and weave fresh patterns with the shadows of the trees. They must course the whole night through, in the ghostly light of a winter moon, for by the time the morning sun has blackened the half-tones of the moonlight shadows, their territory is again well organized, with trails, short-cuts and stopping places, and full of all the erratic wanderings of restless feet.

One is prone upon first sight to mistake the direction that a rabbit has taken, or, if he has seen him go, to think that, like the horse upon which that Briton of history escaped, he has his shoes on backwards. He throws his long hind legs forward at each leap, until they pass the stubby front ones on either side and strike with their broad, snowshoe feet well ahead. The imprints of the front feet are like two round finger-marks in the snow, while those of

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the hind feet—it always seems strange that they are placed ahead—resemble nothing so much as the tracks of tiny snowshoes.

Rabbits are ordinarily leisurely travelers, hopping quietly along upon no apparent object. But when occasion demands, they seem literally to have drawn on seven league boots. This may be when your hound has unexpectedly routed one out of his retreat and is nipping and baying frenziedly at his heels for a few bounds. You can read afterward what has happened, and if the chase has led down hill, the tracks will be yards, I had almost said rods, apart.

But the rabbit soon gains the lead and proceeds carefully and methodically to throw his pursuer off the track. He is in no particular hurry about this, unless the dog is very fast, the footing good, and the scent strong and fresh. He will sit down frequently to look back, then go on a few rods and turn sharply to one side. The dog will overrun and have to hunt about for the trail again.

Br'er Rabbit loves to sit snugly under some sheltering spruce in his home swamp and "spec'late." What "spec'lations" of deep import are carried on under those tapering ears I have no means of knowing, but that they

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consume much of his time is clearly evident from the many little areas of hard packed snow where he stops for his cogitations. The white ones of the big woods have no burrow, and in stormy weather they crouch in some retreat until the snow has entirely closed them in with its warm blanket. When it clears they throw it lightly aside in full assurance that another will meet their necessity.

The partridges also know how warm the snow will make them and plunge precipitately into it as night draws on. Their little, temporary houses must feel cozy indeed when the thermometer is dropping down to about thirty below zero and all the wood folk are making what shift they can to keep life intact. The entrance sometimes slants downward for a foot into the snow and terminates in a little chamber where the bird nestles. About the openings are wing prints, clearly defined. Occasionally the entire top snow has been thrown violently away, evidence of a startled flight at the sensed approach of some enemy. When it snows in the night they are buried deep, and I have had them burst out from the clear expanse before my very feet with a suddenness and noise which is disconcerting. At times, however, the snow turns to freezing rain and a

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hard crust forms, through which they cannot escape. But it's an ill storm of that kind which Br'er Fox cannot turn to his own good account.

Almost the entire business of the woods is a struggle to take life or preserve it, and the recording snow makes note of each incident with broad impartiality. One comes frequently upon the spot where a fox or a bobcat has caught his dinner and eaten it, save for a few scattered feathers or some fur. If a bobcat, the tracks will be rounder and will fall upon either side of a center line drawn through them, instead of being placed straight in front of each other like those of the fox. Or it may be that a weasel has captured a mouse and carried it off to his lair to be devoured at leisure.

Others of the wood people are occupied more peaceably. All about are the tracks of the mice. They come up out of one hole in the snow and go down through another a few feet distant. They have nests down there in the ground, or in the hollow of a tree. The red squirrels are equally omnipresent. Chipmunks have long since begun their hibernation, but the red squirrel is out in the coldest weather, barring storms, running about from tree to tree, intent upon his quest for food, and finding it often in the seeds of pine and spruce

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cones. The remains of his feasts are found in little, scattered clumps upon the snow. But the red squirrel is not limited to what he can find on the branches of the trees. He flirts his tail a few times, jabbers some insulting epithet—he first looks about to be sure that nothing is near to take offense—then disappears head first into the snow. His reappearance may be instantaneous—that epithet is on his mind and someone may have heard—or it may be after half a minute and at a distance of a dozen feet. When he comes up, he will eat his prize where he is or run with it to a near-by tree.

When one first comes upon a hedgehog working, he is certain to think that he has found something. Mr. Hedgehog is a very portly gentleman. His legs are very short, and he has that well developed middle which is guardedly termed a "corporation." In snow he is at a disadvantage. Nevertheless he plows resolutely through it, leaving behind a broad, deep furrow, in the bottom of which are his footprints, almost like the diminutive impression of a person's hands. His paths run in all directions from his den, which is made under a ledge of rocks or in the base of a hollow tree. Wherever one strikes them, he will not have to follow far to headquarters, and

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turning the other way, he may often easily trace the Alderman himself to some tree which he is eating clean of bark.

Of all interesting things in the winter woods a deer yard is one of the most absorbing. Perhaps this is because it is on such a large scale and gives so much evidence of something going on. When the snow is not too deep, the deer wander far afield, browsing on small twigs and scratching through the snow for forage. But when the snow piles higher and higher, giving no support for their delicate feet, and the cruel cold of January settles down, the "winter of their discontent" begins. There is no real yard, as commonly believed, but the deer herd together in some protected locality, which becomes lined with their tracks. Their food is of the scantiest and they frequently starve or freeze. It is a pitiful story, this tragic tale of the deep snow, ending in well-worn fox tracks, which converge upon something beneath a thick spruce, where it last sought refuge from the searching cold.

After the snows of late fall, some day when the mercury has suddenly tumbled down with ominous warning, you may run across the tracks of a bear on his house hunting. They will look like the large prints of a person's hands,

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and can never be mistaken for anything else, both on account of their shape and because of their size. All summer he has ranged the woods, loading fat under his shaggy coat, without ever a thought of the lean season to come. But now he has a sharp reminder and sets out upon his search with all the thoroughness and enthusiasm of some seeker for that ideal apartment. After we have followed him a while, we shall be certain that he will find it. Every brush heap is nosed into, fallen trees are carefully examined, and large standing ones are entirely walked around to see if perchance they contain a hollow large enough for a long nap. Ledges of rock are particularly interesting and are gone over most minutely. Little recesses that appear promising are dug clear of snow. In some he even lies down to try them, but being dissatisfied gets up and hunts further.

At last he finds it. If he is a little fellow, it may be in the rotted out heart of a prostrate hemlock. One of my acquaintances once crawled head first into such a retreat after a supposed coon, and was mightily surprised when he shot a last spring's cub. Or it may be between two rocks, with a down tree forming the roof. An old top or brush heap well banked with snow makes snug haven. Through

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the deepening blanket his warm breath makes a little blow hole. If some hunter chances upon it, he will dig down and put an effective stop to the spring awakening.

Coon tracks are much like those of a bear or hedgehog in general shape, but are at once distinguished from those of even a half grown cub by their much smaller size. They will not be found after real winter sets in, as Mr. Coon is as solicitous about his long winter nap as the bear himself.

This story of the snow is a fascinating narrative. It is no fireside tale, to pass an idle hour while the toes are toasted, but takes one far afield, over the broad, white expanses and in the crisp winter woods, in the very theater where all the action has occurred. The setting itself is sufficiently beautiful to lure one out. But when one can reconstruct all the vital scenes themselves from the records in black and white—sometimes red—the interest is irresistible. Ordinarily the reports are full and complete, but there is upon occasion opportunity for full sweep of the imagination. It may be where one of the tiny mouse tracks has ceased, with no back trail. The snow holds no explanation, unless it be in little agitated patches on either side, brushed by the downy wings of some

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noiseless, swooping vagabond of the air, "such as," to paraphrase the old English, "sleeps on the day and flies on the night, and haunts caverns and questionable places, and no thing wots whence it comes nor whither it goes."

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DIVERSIONS OF THE WINTER CAMP

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CHAPTER XI

DIVERSIONS OF THE WINTER CAMP

THE crisp, invigorating freshness of the winter woods is in itself ample reason for cold weather camping. But added to this are the wonderful, magical effects in black and white and half-tone which make the color scheme of the snowbound landscape. It is a scheme essentially of black and white. To be sure, at times there are dazzling sunsets which rival those of summer in the range of their colors. Nevertheless the contrast between white snow, dark mountainside, and darker tree trunks, and more especially the delicate shadings between, constitute the chief beauty of the winter scenery. Here is challenge enough for the man with a camera, anxious to interpret the winter world in its subtlest moods. His problem is simplified to the extent that the predominant colors of his subject and those of the finished print are identical, black and white. Nevertheless it is a problem in photography

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which requires thoughtful attention to every detail for its full solution. Even the inexperienced amateur, however, may save much of the delicate beauty of his subjects if he will confine himself to snapshots.

There is a tremendous difference in the effect which the rays of light from white snow, sky, and clouds have upon the film or plate when compared with the effect from trees and darker objects. The rays from the darker subjects are largely composed of those toward the red end of the spectrum, the reds, oranges, and yellows, whose action upon the film or plate is comparatively slow. In the light reflected from snow, clouds, and sky, however, is a much larger proportion of blue and violet rays, whose effect upon the plate is unduly violent. This discrepancy is greatly increased when exposures are prolonged. A snapshot in which the darker portions of the view are well lighted tends to equalize the difference in power between the light from the two sources. The well lighted darker objects will be sufficiently exposed to give much desirable quality to the picture, while the snow will not be so blackened in the negative as to obliterate every trace of the delicate half tones. With even a short time exposure the darker objects will be better ex-

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posed, but all detail will vanish from the snow and sky.

Accordingly the user of the small camera, without extra attachments, should limit himself to snapshots wherever it is possible to do so. Of course good snow pictures, which will show the modeling in tracks and in patches of snow and the delicate shades of the shadows, can be made only when the sun shines. On cloudy days the light is so evenly diffused that this detail is lost in the negative.

The more enthusiastic photographer has simple means for breaking the preponderant effect of the blue and violet rays. He may place over the front of his lens a yellow colored glass made for the purpose, which is called a ray screen. This glass may be obtained in various degrees of density, the darker ones having a greater equalizing effect. Through these screens the rays at the red end of the spectrum pass almost without diminution, while the blue and violet rays are held back, largely or almost entirely, from reaching the plate. The screens increase the length of exposure considerably, from about three to twenty times, according to the density of the screen, and time exposures are usually required.

All films and plates are sensitive to the violet

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and blue rays of the spectrum and decreasingly so as one approaches the red rays through the yellow and orange. Those which are considerably sensitive to yellow and orange, and even slightly so to red, are called orthochromatic. All of the common films are orthochromatic, though not so much so as orthochromatic plates. In purchasing plates, however, for use in winter photography, it is necessary to select brands which are stated to possess this quality, as otherwise the orange, yellow, and red rays which are allowed to pass through the screen will not have the full and desired effect.

A point which must be closely watched in winter photography is that of exposure. The sun reflects from the snow on bushes and ground with blinding brilliancy and all of the forest seems bathed in light. Nevertheless the action of light in winter is very greatly decreased and exposures must be correspondingly lengthened. For instance, the exposure on an average and near view, such as a camp building, under the brilliant sun of July at midday, and on the ordinary standard film, using stop F 11, would be one-fiftieth of a second. The exposure upon the same subject—not upon the snow itself, but upon the darker object—at the same time in January would be one-twenty-fifth

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of a second. Various tables and scales for computing exposures under different conditions and at different times may be obtained at small expense.

But there is a better method for the man who seriously wishes to capture such pictures upon the film. He should use an exposure meter, which actually measures the quality of the light at the time of the exposure. The meter is loaded with a piece of sensitive paper. This paper is exposed to the light and the number of seconds counted while it darkens to a certain standard tint. The standard tint is indicated beside the paper and accordingly the process is ridiculously simple. The light is actually measured scientifically and exactly. A scale on the meter then indicates the exposure for various stops and brands of films and plates.

I have given these details at such length because my own winter photographs have aroused much astonished comment from most amateur photographers who have seen them, because of their detail and gradation from high light to shadow, and I wish to show how extremely simple it is to retain these qualities. The matter of composition and the selection of a subject is another problem and gives more play

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for the exercise of individuality and point of view. Saving all parts of the winter scene, however, is a process which proceeds mechanically and certainly.

Hunting is another diversion of the winter woods. In many localities partridges may be shot in the early winter, while rabbits may be almost everywhere taken until March. The rabbits of the north country are the big white ones with snowshoe feet, that make no burrow, but retire in bad weather to the shelter of a drifted windfall or protecting thicket. When routed out by the hound they have, therefore, no hole in which to seek shelter. Usually they will circle round and round, and if the members of the party have placed themselves in strategic locations the opportunity for a shot is quickly presented.

The best place to hunt them is in the swamps, where the smaller growth gives better shelter. Unless hard pressed they will stick close to their well marked runways, and these are the best places to stand. Sometimes, however, they will hot foot it over hill and dale, circling for a round or two at intervals, and leading farther and farther away. It is a merry chase which brings such a racer to bag.

The question of the selection of a good rab-

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bit hound introduces much dog lore which I shall not attempt to discuss. Most campers do not keep such a hound, and accordingly if they take one at all it will be necessary to secure one for the trip, probably at the point of departure. This I have always fortunately been able to do, and it is usually not particularly difficult. The chief point to keep in mind after ascertaining that the dog is good on rabbits is to find out whether he will be led astray on foxes or deer. Unless his nose be single for the scent of rabbits it is better to leave him behind.

Beagles are natural rabbit hounds, and you will do well to get one of them if you wish to own your own dog. Foxhounds that have been specially trained for rabbits are, however, equally satisfactory, if the training has been thorough. Their longer legs make them speedier in deep snow.

The twelve-gauge shotgun is the usual one for rabbits, though a sixten-gauge is heavy enough. The shot which I prefer on the big white fellows of the North Woods is number 4. It is well to have a couple of shells loaded with BB and a couple with buckshot. The first are for stray foxes and the latter for that bobcat that may just possibly be encountered.

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Snowshoe trips abroad are a chief recreation in the winter camp. In all its aspects the wilderness of summer has been changed. The brooks are frozen and blanketed deep with snow. Leaves are gone from the trees and far vistas through the forest abound on every hand. Perhaps somewhere within striking distance will be a lumber camp to which visits can be made and where the native hospitality of the cook and men will prove a long remembeerd delight.

The work of the lumbermen never ceases to fascinate. The wild, reckless bobbing down mountainsides, where nothing but bottom can stop the precipitous plunge, whether a horse fall or a chain break, is all in the day's work. The last loads from the skidways to the landings are frequently bound on by torchlight. Echoing down the darkening road comes a clear, bell-like call, rising and falling in easy cadences, "O-o-o-o H-o-o-o, O-o-o-o H-o-o-o!" Around the bend at the top of a big hill sweeps the sled, horses trotting freely, driver high above with feet braced wide apart, knees bent, chanting warning to all below. The gutterman hastily spreads his last shovelful of sand in the runner tracks and steps aside. The ponderous load tips gently over the summit, pushes

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the horses to a quickening run, and sweeps irresistibly past. From down the trail comes back fainter and fainter the driver's musical cry, "O-o-o-o H-o-o-o, O-o-o-o H-o-o-o!" You make haste to camp and a fire.

If it be true, as someone has said, that the pleasure of camping is in the contrasts, then here certainly it should be unalloyed. The chill breath of Jack Frost strikes to the very core of the forest and trees crack and groan as their inner fibers are torn asunder. The ice on ponds and lakes rives with the detonation of heavy cannonading, now on this side, now with a deeper boom from the other. Constantly twigs snap and fall with a soft thud into the snow.

You step outside for more wood for the fire and the snow crunches dryly under your feet. The moon throws rays of cold, blue light into the aching woods. Nothing alive is about. But on all sides and from farthest distance rises the "protest of the inanimate." You seize the wood and step back into the warmed shelter of the camp.

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CHECK LIST

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CHAPTER XII

CHECK LIST

THE following check list is intended chiefly as a guide. Many of the things mentioned you will not want on some trips and there may be others not named here that you will take. The list is sufficiently comprehensive for the average trip, however, and will serve as an outline to be modified by your own judgment.

PERSONAL OUTFIT

WEAR

Underclothes, two suits
Socks, two pairs
Flannel shirt
Woolen trousers
Coat (Mackinaw or other warm material)
Moccasins (or other footgear suitable for snowshoeing)
Belt
Fur or woolen cap with vizor and ear laps
Mittens or gloves (one or two pairs)
Sweater

IN THE POCKETS

Smoked glasses
Handkerchiefs
Pipe and tobacco

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Jackknife
Compass
Waterproof match box
Watch
Map

IN THE DUFFLE BAG
Underwear, two suits
Socks, two pairs
Extra sweater, or Mackinaw or Pontiac shirt
Extra moccasins
Extra spectacles
Small mirror
Shaving outfit
Tooth brush
Comb
Extra pipe and tobacco
Sewing kit

OTHER DETAILS OF PERSONAL OUTFIT
Snowshoes or Skis
Snowshoe harnesses, thongs or lamp wicking
Camera
Films or plates (changing bag if plates are used)
Gun
Revolver
Cartridges
Ramrod or other cleaner for gun
Gun grease
Pocket axe
Blankets or sleeping bag

PARTY OUTFIT

COOKING OUTFIT

(For comfortable cooking for a party of four)

Three kettles
Two mixing pans
One frying pan
One pancake turner
One teapot
Can opener and corkscrew

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Salt shaker
Pepper shaker
Eight cups (four for soup)
Six plates (extra plates for serving)
Four knives
Five spoons (one in the sugar bag)
Two cooking spoons
One cooking knife
One dumpling pan
Bag to hold cooking outfit
Folding baker
Small push top tin for grease can
Two push top tins for saving food
Empty baking powder can (for molding cold cereals)
Dish cloth
Dish towel

OTHER DETAILS OF THE PARTY OUTFIT

One or two large axes
Cross-cut saw
File or carborundum stone
Medicine kit
Folding candle lantern
Candles
Electric flash
Soap
Toilet paper
Nails
Boot grease
Safety pins
Folding canvas wash basin
Thermometer
Tent (or other temporary shelter)
Packing equipment (pack sacks, pack baskets, pack bags, pack cloths, pack harnesses)
Toboggan or sled
Rope for lashings on toboggan or sled and for other uses
Harnesses for hauling toboggan or sled
Camp stove
Roofing paper
White wrapping paper (for repairing windows)
Matches in a push top tin

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FOOD

(For four persons for two weeks)

Tea, one and one-half pounds
Coffee, two pounds
Cocoa, one-half pound
Beef tea capsules, two dozen
Sugar, ten pounds
Salt, two pounds
Pepper, one-half ounce
Butter, seven pounds
Maple syrup, two quarts
Vinegar, one pint
Evaporated cream, seven cans
Oatmeal, two pounds
Wheatena, two pounds
Prepared pancake flour, two pounds
Wheat flour, twenty-five pounds
Corn meal, six pounds
Rice, two pounds
Macaroni, three pounds
Canned corn, two cans
Baking powder, one pound
Hardtack (or crackers), five pounds
Currie powder, one small can
Lima beans, two pounds
White beans, three pounds
Dehydrated potatoes, two pounds
Dehydrated onions, two pounds
Dehydrated carrots, one pound
Dehydrated eggs, one pound
Fresh eggs, two dozen
Desiccated codfish, two pounds
Bacon, fifteen pounds
Salt pork, eight pounds
Sausage, six pounds
Ham, six pounds
Briskit of beef (or other fresh meat), six pounds
Erbwurst soup, two pounds
Prunes, four pounds
Apricots, two pounds
Lemon jelly powder, two packages
Peanut butter, two pounds
Sweet chocolate, seven pounds

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Crisco, two pounds

Powdered milk (in place of evaporated cream), two pounds
Pemmican (in place of other meats listed above)
Fresh potatoes, one-half bushel (in place of dehydrated potatoes, where weight is no consideration).

A pound of pemmican and a quarter pound of hardtack, with tea, is an adequate ration for a hard day's work when weight must be reduced to the utmost. Where pemmican is the only meat taken, or where it is substituted for a portion of the other meats, the amount carried will depend upon this proportion of substitution as well as upon the other items in the list.

The grub list must be made up not only with regard to difficulties of transportation, but also, so far as possible, with proper reference to the personal tastes of the various members of the party.

The above list has great variety and is large enough to feed a dog besides. It is designed for a permanent camp where cooking facilities are convenient.

Ration lists differ considerably, but in general it may be stated that from fifteen to twenty pounds of food for each person for a week is not only an ample but an extremely liberal allowance. The meats and the various flour

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and kindred foods, including cereals, corn meal, macaroni, etc., will run about pound for pound, while the other items, including sugars, fruits, vegetables, beverages, and seasoning, will run from one-half pound to a pound to each pound of meat, according to the elaborateness of the grub list.

Pack each item of food in a waterproof bag, including pork and other meats.

THE END

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